LOUISIANA COASTAL MANAGEMENT PROGRAM

Draft Assessment and Strategy

2006-2010

Submitted to the

National Oceanic and Atmospheric Administration

Office of Ocean and Coastal Resource Management

For the Determination of Priority Enhancement Areas

Authorized by Section 309 Coastal Zone Protection Act of 1972
(As amended in 1990 and 1996)

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INTRODUCTION

Section 309 of the Coastal Zone Management Act (CZMA), as amended in 1990 and 1996, establishes a voluntary coastal zone enhancement grants program to encourage states and territories to develop program changes in one or more of the following nine coastal zone enhancement areas:

- Public Access
- Coastal Hazards
- Ocean Resources
- Wetlands
- Cumulative and Secondary Impacts
- Marine Debris
- Special Area Management Plans
- Energy and Government Facility Siting
- Aquaculture

This document is an Assessment and Strategy for enhancing Louisiana's Coastal Resources Program (LCRP) using section 309 funding from the U.S. Department of Commerce. The document provides an introduction to Louisiana's Section 309 program, an overview of past 309 efforts, an assessment of coastal resources throughout the Louisiana Coastal Zone (LCZ) as they pertain to the nine pre-identified enhancement areas during the 2001-2005 reporting period, an identification of data gaps in obtaining 309 programmatic objectives, and a multi-year strategy for implementing priority enhancement projects. The implementation of the strategy will result in changes to the LCRP that support attainment of the objectives of one or more of the section 309 enhancement areas.

The assessment portion of the document was placed on public review on April 1, 2006. Various methods were instituted to allow for public participation in the review of the Draft Assessment document. The availability of the Draft Assessment document for review was announced on the Breaux Act Newsflash, which is a newsletter distributed through email to keep individuals abreast on coastal Louisiana issues. The Draft Assessment document was also placed in all 19 coastal parishes, and on the Louisiana Department of Natural Resources/Office of Coastal Restoration and Management (LDNR/OCRM) webpage. Public comments received were incorporated into the Final Assessment document.

Over the past few years, the LCRP has been able to fund important projects through section 309. One such project improved the method by which Louisiana Department of Natural Resources/Coastal Management Division (LDNR/CMD) permit analysts measured wetland impacts and mitigation. The incorporation of a desktop GIS for permit analysts provided all pertinent information necessary for

making permitting decisions on-line; and thus allowed the computer to run a query against the databases and the analyst to be alerted to potential problems and/or impacts. Another important project was the pipeline corridor study to designate a north/south and an east/west pipeline corridor across Lake Pontchartrain. This study not only had benefits in the immediate Lake Pontchartrain area but also served as a model for use in other parts of the LCZ.

To continue improving the LCRP, Louisiana will build on previous Section 309 efforts while expanding its vision to include other concerns. Five strategies in two enhancement areas for the 2006-2010 period are proposed:

- **Coastal Hazards**
    - Digital Mapping of Levees, Pumps, and Flood Control Features in Coastal Louisiana and Update of the Regulatory Hazards Protocol
    - Coastal Hazard Mitigation Guidebook Outreach
    - Coastal Use Activities Affecting the Chenier Plain Ecosystem
    - Canal Construction and Maintenance
- **Wetlands**
    - Beneficial Use of Dredge Material Contribution Fund

SUMMARY OF PAST EFFORTS

As a result of the Section 309 Assessment in 2001, the identified three priority enhancement areas: 1) developing pipeline corridors in Lake Pontchartrain, 2) water use and 3) private canal barricades. A number of unexpected events occurred which required that the Louisiana Coastal Resources Program revise its Section 309 Strategy as originally proposed in April, 2001. These events were largely outside the control of the LDNR/CMD, and LDNR/CMD's proposed response to these events was to delete the private canal barricades and the water use of the approved Section 309 tasks. The new task proposed was the Revision of the Coastal Use Permit (CUP) Mitigation Process. The first two priority enhancement areas were deleted because the Louisiana Legislature acted to address both issues subsequent to the development of the Final Section 309 Strategy.

In the case of the Barricade issue, the LDNR determined that the task was being addressed by other state efforts and therefore did not carry the task out.

In the case of the Water Use Task, the Legislature passed a bill which created a Task Force to develop Louisiana's water use policies. Part of the role of the Task Force was to determine which agencies should be responsible for which actions. Further, the timetable of the Task Force and the Water Use Task were not compatible. Since another LDNR agency (Office of Conservation) was the lead agency in the water use effort, CMD determined to not carry out the water use task.

The task which replaced these tasks was the Revision of the CUP Mitigation Process. The CUP Mitigation Rules, La. Admin. Code 43:I,724 were established in August 1995 with agency and stakeholder input. In recent years, LDNR/CMD permit and mitigation staff have recognized the need to improve the CUP mitigation process in order to help streamline the permitting process and make it more efficient. A program change which will occur as a result of this task will be amended mitigation regulations and modified regulatory procedures. Once the regulations are amended through the state Administrative Procedures Act, the LDNR/CMD will submit them to the National Oceanic and Atmospheric Administration (NOAA) as a Routine Program Change. This task involved a review and evaluation of existing mitigation procedures and rules to determine where the problem areas occurred and what could be done about them. In addition to reviewing the mitigation procedures and regulations from the CUP perspective, the effect of mitigation procedures on Local Coastal Programs (LCPs) and federal consistency was also evaluated.

During the 2001-2005 assessment period, LDNR/CMD mitigation staff have drafted proposed amended mitigation rules to reflect updated restoration costs for the LCZ, to evaluate time-based mitigation requirements, and to increase the

ability of LCPs to successfully achieve mitigation. The proposed amended rules have gone through internal agency review and are currently undergoing a legal citation review. The estimated date for promulgation of the revised rules is July 10, 2006. The benefits of these revised mitigation regulations will be realized by LDNR/CMD permit and mitigation staff, LCPs, and stakeholders.

The priority enhancement project to develop pipeline corridors in Lake Pontchartrain stemmed from the issue of increased population in the LCZ and the increased need for oil and gas pipelines. The issue is becoming more difficult as the coastal population expands and the demand for oil and gas increases. In previous years it was relatively easy to place pipelines in areas that were unpopulated, although this often resulted in adverse impacts to farmland, wetlands, and water bodies. Now that the coastal population has expanded and that the value of the remaining farmland, wetlands, and water bodies has been recognized, the siting of pipelines has become more problematic.

As a result, LDNR/CMD proposed that a pipeline corridor study be done to designate a north/south and an east/west pipeline corridor across Lake Pontchartrain. The study involved stakeholders from the pipeline industry, regulatory and commenting government agencies, the environmental community, and such other groups who expressed interest in participating in the study. A set of General Conditions for the CUP process was established outlining the location, placement, and design and construction criteria for the pipeline corridors, which were based on discussions with the above mentioned groups and the technical expertise of the LDNR/CMD staff. This study not only had benefits in the immediate Lake Pontchartrain area but will also serve as a model for use in other parts of the LCZ.

PUBLIC ACCESS

SECTION 309 PROGRAMMATIC OBJECTIVES

I. Improve public access through regulatory, statutory, and legal systems.
II. Acquire, improve, and maintain public access sites to meet current and future demand through the use of innovative funding and acquisition techniques.
III. Develop or enhance a Coastal Public Access Management Plan which takes into account the provision of public access to all users of coastal areas of recreational, historical, aesthetic, ecological, and cultural value.
IV. Minimize potential adverse impacts of public access on coastal resources and private property rights through appropriate protection measures.

RESOURCE CHARACTERIZATION

Extent and Trends in Providing Public Access (publicly owned or accessible):

1. Provide a qualitative and quantitative description of the current status of public access in your jurisdiction. Also, identify any ongoing or planned efforts to develop quantitative measures to assess your progress in managing this issue area.

Louisiana has long been referred to as a Sportsman's Paradise. Louisiana's coastal zone provides a variety of recreational opportunities and amenities to residents and tourists alike. Louisiana's vast landscape, from the Gulf of Mexico, to the herbaceous wetlands, to the forested wetlands, and the upland and plains in the inland areas, provides the opportunity for outdoor activity such as hiking, biking, swimming, fishing, boating, camping, hunting, birding, and picnicking.

The major contributors to public recreation in Louisiana are parish and local governments, the Louisiana Department of Wildlife and Fisheries (LDWF); the Louisiana Office of Forestry; the Louisiana Department of Culture, Recreation and Tourism; Sabine River Authority; the United States Forest Service; the United States Army Corps of Engineers (USACE); the National Park Service; and the United States Fish and Wildlife Service (USFWS). Coastal Louisiana has 17 Wildlife Management Areas and Wildlife Refuges, seven National Wildlife Refuges, seven State Parks, and one National Park providing public access to recreational and cultural resources for locals and tourists.

A major problem which continues to plague recreational contributors and users is the lack of available public access. Public access to beaches and recreational

areas situated on the Gulf of Mexico currently comprise less than one percent of the entire Louisiana coastline. Access points along the coast that were once available to the public are now closed due to private ownership or commercial development (Office of State Parks, 2003).

Hurricanes Katrina and Rita swept across the Louisiana coastal zone bringing onshore a devastating storm surge. An assessment of public access sites has not been done at this time, but it is probably safe to assume that a large majority of public access points within the LCZ were compromised in some fashion either by being obstructed by debris or decimated from winds and storm surge. This effect will be most acutely felt by coastal parishes such as St. Tammany, St. Bernard, Plaquemines, and Cameron, which sustained the most damage from the hurricanes.

The effects of storm debris, such as building wreckage, cars, home appliances, boats, barrels, tanks/containers on public access are another issue that is of concern. The Federal Emergency Management Agency (FEMA) coordinates federal assistance following a disaster in the United States. FEMA provides supplemental aid to communities and the State to help them during recovery from a disaster. Through the Public Assistance Program, state and local governments and nonprofit groups are being offered aid to conduct recovery and response operations including debris removal as well as support to develop hazard mitigation measures (Table 1). Debris removal across the LCZ is also being addressed through ESF-3 and ESF-10. At this time, priority regarding debris removal is to clear rights of way for accessibility down streets and major thoroughfares to essential points of interest for the public and to clear potentially hazardous material.

Table 1. Categories of work done by FEMA through the Public Assistance Program

	Category	Type of Work
Emergency Work	A	Debris removal
	B	Emergency protective measures
Permanent Work	C	Roads and Bridges
	D	Water control facilities
	E	Buildings and equipment
	F	Utilities
	G	Parks, recreational facilities, and other items

Adopted from the FEMA Public Assistance Guide

Information on Access type and numbers was gathered from the Louisiana Division of Administration, Infrastructure Info Center; the Louisiana Department of Culture, Recreation and Tourism, Office of State Parks; and the LDNR/CMD permitting database. Some of these projects have been completed and some are authorized or permitted only. The LDNR/CMD or other state or local

databases do not record these variables as such, and therefore this information is not easily gleaned. Another information source is the Louisiana Oil Spill Coordinators Data Catalog and web site (http://lagic/lsu.edu/loscoweb) which records boat launch locations. However, this database does not provide a date when the structure was built, so it was not included in the listing below.

Access Type	Current Number(s)	Change Since Last Assessment
State/Parish/Local Parks (# and acres)	51(49.2acres)/14/2	unknown
Beach/Shoreline Access Sites (#)*	1	
Recreational Boat (power or non-power) Access Sites (#)	13	
Designated Scenic Vistas or Overlook Points #	4	
State or Locally Designated Perpendicular Rights-of-Way (i.e., street ends, easements) #		
Fishing Points (i.e., piers, jetties) #	9	
Coastal Trails/Boardwalks (# and miles)	17 (2.96 miles)	
ADA Compliant Access (%)	7	
Dune Walkovers (#)		
Public Beaches with Water Quality Monitoring and Public Notice (% of total beach miles) and Number Closed due to Water Quality Concerns (# beach mile days)	13 beaches have water quality monitoring stations. 4 of these were in non-compliance and posted swimming advisories (2005)	
Number of Existing Public Access Sites that have been Enhanced (i.e., parking, restrooms, signage #)*	44	

2. Briefly characterize the demand for coastal public access within the coastal zone, and the process for periodically assessing public demand.*

Demand for public access in the LCZ remains high. The most recent Louisiana Statewide Comprehensive Outdoor Recreation Plan (Office of State Parks 2003) states that issues regarding facility needs in the Southern region of the state include access to Louisiana's coastline other than by boat (Office of State Parks 2003, p. 8). Public access to beaches and recreational areas situated on the Gulf of Mexico currently comprise less than one percent of the entire Louisiana coastline. Access points along the coast that were once available to the public are now closed due to private ownership or commercial development (Office of State Parks 2003).

3. Identify any significant impediments to providing adequate access, including conflicts with other resource management objectives.

Louisiana's LCZ is experiencing drastic land loss brought about by a combination of levee construction, subsidence, and sea level rise. LDNR/OCRM actively works to restore the devastating effects of coastal erosion on environmental functions, but there is also a socio-economic component to this wetland loss. The vast expanse of fragile land is of significant value to the state and the nation. Louisiana's wetlands contribute greatly to the nation's fish and wildlife production, provide migratory grounds for birds, and buffer damaging impacts of storms. Eco-tourism wetland related activities contribute $220 million annually to the state's economy (Coreil 1994). The Office of State Parks (2003) has stated their concern about the carrying capacity of some of the state's public recreation and natural areas allowing public access while protecting the environment.

The Office of State Parks expresses concern regarding poor water quality restrictions on water-oriented recreation. Although this situation seems to be reversing, the agency is still concerned about sewage treatment, agricultural runoff, industrial waste, and littering affecting public recreational facilities (Office of State Parks 2003).

Louisiana's outdoor recreation suppliers are faced with dwindling funds. Federal and state reduction in funds has hampered the ability for normal everyday operations, maintenance, and repair of recreational facilities and programs. To add to this already declining source of funding for the State for recreational and public access, funding from the federal government through the Land and Water Conservation Fund and the Federal Highway Administration to fund acquisition and development of public outdoor recreation areas and facilities and the Louisiana Department of Transportation and Development's Transportation Enhancement Program respectively have been cut drastically (S. Meek, *pers. commun*. 2005, S. Murray, *person. commun*. 2005).

4. Please explain any deficiencies or limitations in data.

Louisiana currently has no central repository for compiling pubic access available throughout the LCZ or the state. A database containing all public access sites with pertinent information (i.e., directions, specifications, and pictures) would aid Louisiana residents and tourists who use recreational facilities in Louisiana. This could also support emergency and planning efforts during the response and recovery stage of a natural disaster or other emergency event.

5. Does the state have a Public Access Guide or Website: How current is the publication or how frequently is the website updated?

The State of Louisiana does not publish a Public Access Guide or keep a website listing the public access locations across the state or LCZ. The Louisiana Department of Culture, Recreation, and Tourism has the majority of information regarding recreational areas throughout the state. Its website can be found at http://www.crt.state.la.us/.

MANAGEMENT CHARACTERIZATION

1. For each of the management categories below, identify significant changes since the last assessment.

	Change Since Last Assessment		
Management Category	**Significant**	**Moderate**	**None**
Statutory, regulatory, or legal system			**X**
Acquisition programs or techniques			**X**
Comprehensive access management planning (including GIS database development)			**X**
Operation and maintenance programs			**X**
Funding sources or techniques			**X**
Education and outreach			**X**
Beach water quality monitoring and/or pollution source identification and			**X**

remediation programs			

2. For categories with changes, provide the following information for each change: summarize the change, specify whether it was a 309, 306A, or other CZM driven change and specify funding source, and characterize the effect of the changes in terms of both program outputs and outcomes.

There have been no changes regarding public access which occurred under the referenced management categories over the past four years.

CONCLUSION

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 strategy.

Pursuant to La. Rev. Stat. 49:214.21 *et seq*. LDNR/CMD is charged with implementing the LCRP in order to protect, develop, and where feasible, restore or enhance resources of the LCZ. LDNR/CMD does not receive state funds for public access or recreation programs. The cutback in Section 306 funding has resulted in insufficient federal funding to allow CMD to conduct its core functions and still provide Section 306A grants. Wetland loss is the paramount responsibility of LDNR/CMD , and as a result fees and federal grants are applied to the operation and maintenance of programs which support this initiative.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and allocating 309 funding and why?

In the past, construction, operation, and maintenance of public access locations has not been a primary charge of LDNR/CMD as explained above. The State of Louisiana has assigned that responsibility to agencies such as Louisiana Department of Culture, Recreation, and Tourism and LDWF. Through the LCRP all public and private developments within the LCZ go through a permitting process, in order to ensure that projects minimize any negative impacts to coastal wetlands. Various types of public access such as boardwalks, trails, and parks are eligible for funding through 306A of the Coastal Zone Management Act, and CMD will make 306A grants available if, and when, adequate CZMA funding is made available for that purpose. LDNR/CMD recognizes the need for public access within the LCZ and, as a result, remains open to working with other programs or agencies involved with public access as it relates to wetland areas in the LCZ in the future.

2000-2005 Assessment	2006-2010 Assessment
High	High

Medium	Medium
Low	Low

COASTAL HAZARDS

SECTION 309 PROGRAMMATIC OBJECTIVES

I. Direct future public and private development and redevelopment away from hazardous areas, including the high hazard areas delineated as FEMA V-zones and areas vulnerable to inundation from sea level rise.
II. Preserve and restore the protective functions of natural shoreline features such as beaches, dunes, and wetlands.
III. Prevent or minimize threats to existing populations and property from both episodic and chronic coastal hazards.

RESOURCE CHARACTERIZATION

1. Characterize the general level of risk in your state from the following coastal hazards:

	Level of Risk		
Coastal Hazard	**High**	**Medium**	**Low**
Hurricane	**X**		
Storm Surge*	**X**		
Flooding*	**X**		
Shoreline erosion*	**X**		
Sea level rise*	**X**		
Subsidence*	**X**		
Geological hazards*			**X**
Other (specify)			
Terrorism	**X**		

The risk of a hurricane striking the coast of Louisiana remains high and a constant threat each hurricane season. During the last reporting period, four tropical storms and five hurricanes raged across the coast of Louisiana. In 2005,

Louisiana residents witnessed two of the strongest storms to hit the Louisiana coast, Katrina and Rita. The storm surge associated with these storms devastated cities throughout the LCZ, impacting homes, businesses, schools, and recreational facilities. Boats were washed several miles inland, stranded on wetlands and were not able to be retrieved. Wells and/or production platforms toppled; petroleum and hazardous material containers of various types floated from their foundations; storm surges filled agriculture fields destroying crops; and pipelines broke spilling oil onto adjacent wetlands and water bodies. Primary residences and recreational camps at Grand Isle, Fourchon, Caminada, Rutherford Beach, and Holly Beach, as well as inland communities such as Lafitte, Empire, Cameron, lower St. Bernard and Plaquemines Parishes and the region south of Houma suffered major damages from the destructive forces of wind and water from the hurricanes.

The parishes of Orleans, St. Bernard, Plaquemines, Jefferson, and St. Tammany suffered extreme destruction when Hurricane Katrina swept across Louisiana. Flooding in the New Orleans and surrounding areas was expected, but the extent of the inundation was uncertain. Four breaches occurred along three New Orleans canals as a result of Katrina and lead to catastrophic damages. The levees were never designed to withstand a Category 4 or 5 hurricane. Katrina was later determined to be a Category 3, demonstrating that the levees could not hold up to a category 3 and its associated storm surge.

The Mississippi River delta plain is subject to the highest rate of relative sea level rise (3ft per century) of any region in the Nation in large part due to rapid geologic subsidence. The rising sea level and subsidence act to accelerate coastal erosion and wetland loss (USGS 2004). Coastal wetlands provide a necessary buffer for storm surge and a cover of protection around critical infrastructure such as levees and oil and gas wells and platforms.

2. If the level of risk or state of knowledge about any of these hazards has changed since the last assessment, please explain. Also, identify any ongoing or planned efforts to develop quantitative measures for this issue area.

Louisiana remains at a high level of risk for a major hurricane striking its coast. According to the National Weather Service, the Atlantic is in a long-term state of heightened activity which may continue for the next decade or longer (Britt). Climatologists are forecasting that 2006 will be another active hurricane season. Areas of coastal Louisiana hit hardest by hurricanes Katrina and Rita will not be able to rebuild and repair before the 2006 season begins. This will leave them extremely susceptible to storm surge and flooding if another major hurricane makes landfall.

As Louisiana's wetlands disappear, oil and gas infrastructure along the coast becomes exposed to open Gulf conditions. Wells and platforms that were once

grounded by marsh are now in open water susceptible to damage and to a potential major oil or other hazardous material incident.

Subsidence is a major contributor to coastal erosion and land loss in Louisiana. In 2005 NOAA National Geodetic Survey (NOAA/NGS) began a nationwide campaign to readjust the horizontal position and ellipsoidal heights in the National Spatial Reference System (NSRS) using high accuracy global positioning system data. The project is scheduled for completion in 2007. The last general readjustment occurred in 1986. As part of this initiative, NOAA/NGS and the Louisiana Spatial Reference Center at LSU have released updated elevation information for coastal Louisiana. This survey data will be incorporated into the readjustment of the NSRS. The NSRS data will play a crucial role in emergency planning and response during hurricanes and other natural disasters. It should also inform us with regard to reconstruction and ongoing development in the LCZ.

The Chenier plain is positioned to the west of the deltaic plain and is characterized by marsh that is segmented by long, narrow coast-parallel sand and shell ridges. In the last several decades, humans have impacted the Chenier ecosystems with such activities as mining and exporting mined materials out of the Chenier Plains, livestock grazing, fence building, road building, and urbanization. Marine forces such as winds, tides, and currents, may be acting in concert with human activities that favor erosional processes, acting to exacerbate subsidence, and ultimately the loss of these higher elevation geomorphic features. Louisiana's Chenier plains serve as habitat for neo-tropical, trans-gulf migratory birds, many species of fish and shellfish, and a host of other aquatic and terrestrial species. Resource planners and managers do not know the extent to which the coastal use activities detailed above affect the geomorphic integrity of these Chenier ridges and their ability to provide a natural buffer for storm surge, inland flooding, and saltwater intrusion.

In 2003, the Louisiana Department of Emergency Preparedness became the Louisiana Office of Homeland Security and Emergency Preparedness, reflecting the additional responsibilities to the State of Louisiana and its citizens. Since the tragedy of September 11, 2001, the nation has become more vigilant in protecting itself from a terrorist attack. Louisiana poses a high risk to potential terrorism with its tremendous petro-chemical industry, maritime/riverine transportation, 14 major ports, and the Louisiana Offshore Oil Platform (LOOP).

3. Summarize the risks from inappropriate development in the state, e.g., life and property at risk, publicly funded infrastructure at risk, resources at risk.

Louisiana's ecological, recreational, and cultural resources are at a high risk of loss and devastation. The reality of that statement was made clear when Hurricanes Katrina and Rita hit the LCZ. Coastal Louisiana is home to over two million people, representing 46% of the state's population. When investments in

facilities, supporting service activities, and the urban infrastructure are totaled, the capital investment in the Louisiana coastal area adds up to approximately $100 billion (USACE 2004).

According to the LRA, preliminary estimates of financial impacts to the LCZ from the two storms are (Louisiana Recovery Authority 2006):

- *Property and infrastructure*
  $75-100 Billion

- *Levee restoration to pre-Katrina authorized levels*
  $3 Billion

- *Residential homes and personal property*
  $27-35 Billion

- *Businesses and commercial property*
  $25-29 Billion

- *Infrastructure including roads, bridges, utilities, and debris removal*
  $15-18 Billion

- *State facilities and public/private education and health care facilities*
  $6-8 Billion

- *Economic (gross state product through 2009)*
  $50-70 Billion

- *Government fiscal stability*
  $8-10 Billion

- *Estimated state revenue shortfall discounted over five years*
  $4-5 Billion (through 2009)

- *Estimated local city and parish government revenue shortfall discounted over five years*
  $4-5 Billion (through 2009)

MANAGEMENT CHARACTERIZATION

1. Indicate significant changes to the States hazards protection programs since last assessment.

	Change Since Last Assessment

Management Category	Significant	Moderate	None
Building setbacks/restriction*			**X**
Methodologies for determining setbacks			**X**
Repair/rebuilding restrictions	**X**		
Restriction of hard shoreline protection structures			**X**
Beach/dune protection		**X**	
Permit compliance			**X**
Inlet management plans			**X**
Special Area Management Plans			**X**
Local hazards mitigation planning	**X**		
Local post-disaster redevelopment plans	**X**		
Real estate sales disclosure requirements			**X**
Restrictions on publicly funded infrastructure			**X**
Public education and outreach	**X**		
Mapping/GIS/tracking of hazard areas			**X**

2. For categories with changes, provide the following information for each change: 1) summarize the change, 2) specify whether it was a 309 or other CZM driven change and specify funding source, and 3) characterize the effect of the changes in terms of both program outputs and outcomes.

Repair/Rebuilding Restrictions

State Building Codes (Louisiana Legislature)

The Governor of Louisiana signed Senate Bill No. 44 during the 2005 1st Extraordinary Session of the Louisiana Legislature calling for the state to adopt the International Building Code, International Existing Building Code, International Residential Code, International Mechanical Code, and International Fuel Gas Code. The bill enforces a state uniform construction code for building constructed in the wake of Hurricanes Katrina and Rita and to all building built or rebuilt statewide starting in 2007 (International Code Council). Prior to this

legislation, Louisiana did not have a state uniform construction code established. Building requirements remained more of a local government concern but were not always enforced. Following the storms, insurance companies threatened to not issue policies without building codes in place.

Revised Advisory Flood Base Elevations (FEMA)
FEMA will require communities to adhere to the elevation requirements established by Advisory Base Flood Elevations (ABFEs) in order to be eligible for FEMA-funding for certain mitigation and recovery projects. Following major catastrophic events such as Hurricanes Katrina and Rita, FEMA can reassess the most current flood-risk data. The ABFEs are a result of such a reassessment. The ABFEs are significantly higher than the base flood elevations (BFEs) shown on pre-Katrina flood maps, and extend farther inland than the Special Flood Hazard Areas on the existing maps. A base flood elevation is the height, relative to the mean sea level, that has a one percent chance of being equaled or exceeded by flood waters in a given year. It is one of the key building standards required for communities participating in the National Flood Insurance Program (NFIP).

To date, ABFEs exist for Calcasieu, Cameron, Iberia, Lafourche, St. Charles, St. John the Baptist, St. Mary, St. Tammany, Tangipahoa, Terrebonne and Vermilion parishes in Louisiana. Additional ABFEs are being developed for four Louisiana parishes, Orleans, Jefferson, St. Bernard and Plaquemines, protected by levees, including the city of New Orleans. FEMA is working closely with State and local officials, and the Army Corps of Engineers to analyze the situation and provide the best information for the four remaining parishes.

Beach/Dune Protection
La. Rev. Stat. 49:213.9 – Certain activities on dunes prohibited; penalties; speed limits on beaches (Louisiana Legislature)
During the last assessment period, the Louisiana Legislature enacted La. Rev. Stat. 49:213.9 which prohibited certain activities on dunes located in the LCZ; authorized certain parishes to establish speed limits; to provide for penalties; and to provide for related matters. Unless operating under a permit issued by a state or federal agency, no person is allowed to willfully or maliciously cut, alter, break, or destroy a dune, or ride, drive, operate, or haul any motorized or mechanical vehicle except on public roads.

La. Rev. Stat. 49:214.7 – Barrier islands and shorelines stabilization and preservation (Louisiana Legislature)
In 2004, Louisiana Legislature passed La. Rev. Stat. 49:214.7 to establish a program for barrier islands and shoreline stabilization and preservation. The secretary of LDNR shall establish a barrier islands and shorelines stabilization and preservation program within the Louisiana Coastal Wetlands Conservation and Restoration Program. Each year those parishes with barrier islands and shorelines shall submit a list of barrier islands and shoreline stabilization and

preservation projects requested for that parish. LDNR/CMD will review the projects and issue a priority list which will be promulgated and subject to legislative oversight. Funding is available through the Barrier Islands and Shorelines Stabilization and Preservation Fund. If funding is not appropriated in a given year, the barrier island and shorelines stabilization and preservation program shall be suspended until funds are appropriated for the program.

Local Hazards Mitigation Planning

State Hazard Mitigation Plan (FEMA)

The State of Louisiana Office of Homeland Security and Emergency Preparedness, with the assistance and cooperation of the State Hazard Mitigation Planning Committee, undertook the development of a comprehensive State of Louisiana Hazard Mitigation Strategy in 2004. The impetus for developing this strategy comes in part from the long-term commitment of the State of Louisiana to reduce the impact of natural hazards and in part in response to Federal law.

Louisiana Anti-terrorism Act (Louisiana Legislature)

Louisiana law provides mechanisms for the government to act and define the appropriate limits of that action. The Governor, operating within these parameters, pursuant to Executive Order Number MJF 2001-42 ("The Executive Order"), issued on September 21, 2001, established the Louisiana Domestic Terrorism Advisory Committee within the Executive Department, Office of the Governor to plan and execute a Louisiana-specific domestic terrorism threat and needs assessment; to develop based on that assessment, a three-year plan to enhance overall emergency response capabilities to terrorist events; and to direct the administration and distribution of federal funds to accomplish these objectives and to provide localities with funding to purchase equipment to support the state and local response to emergencies. The State Legislature has also moved forward to combat the terrorist threat through passage of important legislation including the Louisiana Anti-terrorism Act ("the Anti-terrorism Act"), Act No. 128 of the First Extraordinary Session, 2002.

Louisiana Coastal Hazard Mitigation Guidebook (FEMA)

The Louisiana Sea Grant College Program is proposing to publish a Louisiana Coastal Hazard Mitigation Guidebook. Through education and public outreach, the guidebook will provide information to local coastal officials, planners, builders, and consumers in Louisiana to assist in making wise decisions as they rebuild communities for the future. Louisiana Sea Grant Legal Program has consulted with experts in coastal zone management to begin putting together the guidebook.

Local Post-Disaster Redevelopment Plans

Louisiana Recovery and Rebuilding Conference (unknown)

In November 2005, the Louisiana Recovery and Rebuilding Conference was held in New Orleans, Louisiana at the request of the Louisiana Recovery Authority

(LRA). This conference was to mark the beginning of the development of planning principles and rebuilding plans that will guide long-range recovery efforts for those parishes affected by Hurricanes Katrina and Rita. More than 650 citizens, community leaders, architects, business people, and public officials took part in the event. Policy goals and planning principles for each of the devastated parishes were identified by participants as: create infrastructure, promote economic growth, provide public services, pursue policies, plan and design communities. A common theme among all parishes was the use of smart growth principles and mixed-use development.

Public Education and Outreach

Louisiana Coastal Hazard Mitigation Guidebook (FEMA)

The Louisiana Coastal Hazard Mitigation Guidebook described under Local Hazards Mitigation Planning also meets Public Education and Outreach criteria.

3. Discuss significant impediments to meeting the 309 programmatic objectives (e.g., lack of data, lack of technology, lack of funding, legally indefensible, inadequate policies, etc.).

Digital Mapping of Levees, Pumps, and Flood Control Features in Coastal Louisiana and Update of the Regulatory Hazards Protocol

Currently, almost all of the communities in the LCZ have some sort of flood protection system. Most of the cities are surrounded by levees and the water levels controlled by pumps. There is no current map, hardcopy or digital, collectively of these flood protection systems. There are major flood protection systems built and maintained by the USACE and under the control of various state levee boards, other large levee systems maintained by the parish (county) governments, smaller systems under control of public drainage agencies, and numerous privately managed large levee and pump systems protecting residences and agricultural operations. All of the information and maps reside with the respective agency or individuals responsible for the systems; there is no central repository.

A GIS database with the location of levees and pump stations including basic and pertinent information about each of those features does not exist and is needed by many agencies of the State of Louisiana to more efficiently and effectively perform their mandates in the LCZ. Additionally, for those critical applications of protection of life and property, specialized user interfaces, queries, and displays are needed that provide for use of the application without a great deal of training or knowledge of the GIS software. The goal of this project is to complete a GIS dataset of all levees and pump stations in the LCZ, and to develop tools that fulfill aspects of emergency response and planning as described in this proposal, as well as to design the project so that it is flexible enough to be used as a basis for future projects that refine and/or add to the data and utility of the data and tools associated with this project. These data and tools will be used for emergency response and planning; flood protection and drainage

projects planning; coastal restoration project analysis and design; and for coastal use regulatory permit application review and determinations.

Appropriate Subdivision Development Evaluation

Subdivision development in the LCZ currently requires a CUP. When the activity occurs in a parish with a local coastal program the activity is usually deemed a local concern unless it involves state owned waterways which would make it a state concern. Before receiving a CUP to begin construction, applicants must complete the supplemental information packet for new residential subdivision development. Information requested includes: administrative and legal information, physical/land planning, housing market need information, social impacts, economic impacts, traffic impacts, and environmental impacts. In the aftermath and recovery of Hurricanes Katrina and Rita, LDNR/CMD would like to address issues of appropriate subdivision development in the LCZ. Coastal zone managers and planners need to take a better look at the zoning and subdivision regulations for siting of such developments. Potential educational opportunities vis-à-vis workshops on new state statutes may be appropriate.

Canal Construction and Maintenance

Canal construction and maintenance are coastal uses that may be state or local concern uses. Reports following the passage of Hurricanes Katrina and Rita evidenced that the orientation of canals may in fact influence their potential to serve as conduits for storm surge into populated areas. The maintenance of these canals may also play an important role in reducing or exacerbating hazards. For example, the plugging (damming) of canals and in some cases, spoil banks may reduce or attenuate storm surge. According to La. Admin. Code, Title 43:I,701.G.20 which states:

> "(It is the policy of the coastal resources program to avoid …) Increases in the potential for flood, hurricane and other storm damage, or increases in the likelihood that damage will occur from such hazards",

activities such as canal construction and maintenance are carefully reviewed depending on the proposed coastal use. Unfortunately, there is a lack of data documenting which canal construction and maintenance techniques are appropriate in the LCZ given hurricane hazards.

Coastal Use Activities Affecting the Chenier Plain Ecosystem

Louisiana's Chenier Plain serves as habitat for neo-tropical, trans-gulf migratory birds, many species of fish and shellfish, and a host of other aquatic and terrestrial species, in addition to the role they play in abating inland flooding and saltwater intrusion as well. Development and maintenance of pipelines, roads or utilities, grazing practices, mining practices, and residential development are just a few of the human activities being perceived as threats to the composition and structure of these geologic features and their associated wildlife habitats. Subsidence, shoreline erosion, and associated increased salinity gradients

(saltwater intrusion) are believed to be the leading causes for natural threats to these unique coastal features.

Post Hurricane Rita, the need to assess the ecological health, productivity and overall condition of these geologic features is evidenced by the State's requirement to make an informed decision as to what human activities to allow on these sensitive geologic features. The desire to reintroduce livestock, rebuild homes and businesses, and reconstruct roads in these areas is increasing as time goes on. With limited data to support the overall public sentiment that human activities on Cheniers are adding to the demise of these geologic features and reducing their capacity to abate storm surge and flooding, it becomes increasingly difficult for the State to take the position that they should disallow rebuilding along the Cheniers.

CONCLUSION

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 strategy.

PRIORITY1 - HIGH: DIGITAL MAPPING OF LEVEES, PUMPS AND FLOOD CONTROL FEATURES IN COASTAL LOUISIANA

A GIS database with the location of levees and pump stations including basic and pertinent information about each of those features does not exist and is needed by many agencies of the State of Louisiana to more efficiently and effectively perform their mandates in the LCZ. Additionally, for those critical applications of protection of life and property, specialized user interfaces, queries, and displays are needed that provide for use of the application without a great deal of training or knowledge of the GIS software. The goal of this project is to complete a GIS dataset of all levees and pump stations in the LCZ and to develop tools that fulfill aspects of emergency response and planning, as well as to design the project so that it is flexible enough to be used as a basis for future projects that refine and/or add to the data and utility of the data and tools associated with this project. These data and tools will be used for emergency response and planning; flood protection and drainage projects planning; coastal restoration project analysis and design; and for coastal use regulatory permit application review and determinations.

PRIORITY 2 - HIGH: LOUISIANA COASTAL HAZARD MITIGATION GUIDEBOOK LOCAL COASTAL PROGRAM COORDINATION

LDNR/CMD sees the need for Louisiana to have a coastal hazard mitigation guidebook and supports the initiative of Louisiana Sea Grant in this endeavor. The planning and implementation of the Louisiana Coastal Hazard and Mitigation Guidebook will further help to educate parish officials on concepts to best build structures and to best plan communities to withstand natural hazards. It will be important for the LCPs to coordinate with those planning the guidebook in order

to make sure that areas of concern and need are properly addressed in the guidebook. Also, participation of LCPs during the planning phase will ensure the necessary understanding of guidelines in order to effectively and properly encourage their implementation.

PRIORITY 3 – HIGH: COASTAL USE ACTIVITIES AFFECTING THE CHENIER PLAIN ECOSYSTEM

LDNR/CMD recognizes the significant environmental and structural roles that natural coastal features play in Louisiana. Post Hurricanes Katrina and Rita, the State has recognized the significant role they play in hazard mitigation and protection of life and property in the LCZ.

For this and other reasons, LDNR/CMD sees the need for an in depth assessment and review of existing conditions of Louisiana's Chenier ridges, as well as a study of how anthropogenic activities are affecting the overall integrity of these geologic features. It would be prudent to initiate an outreach program to engage the local coastal program leaders in a study that would define certain human activities, such as grazing, forestry activities, urbanization, and mining, monitoring these activities for any changes, negative or positive, to the ecological, biological, and structural integrity of the Chenier, and record these effects, looking for any correlations. This could be done through the CUP process.

PRIORITY 4 – HIGH: CANAL CONSTRUCTION AND MAINTENANCE

LDNR/CMD recognizes the significance of providing guidance to CUP applicants on the construction and maintenance of canals for uses in the LCZ. Correct information regarding canal construction and maintenance methods is needed. A study comparing appropriate canal construction and orientation and the short and long term maintenance of these canals in relation to storm surge susceptibility and storm surge dampening would greatly aid regulatory agency personnel in providing direction to coastal users on the issue.

PRIORITY 5 –MODERATE: APPROPRIATE SUBDIVISION DEVELOPMENT EVALUATION

LDNR/CMD realizes the importance and the immediacy of evaluating subdivision development in high hazard zones and thus it is a priority. The fact that it is a moderate priority is based on four particular reasons. First, LDNR/CMD has already taken measures to address the concern by issuing an internal division policy stressing the importance of considering and appropriately weighing elements of proposed coastal uses which are associated with hazards. Second, to be successful in directing appropriate subdivision development in hazardous areas, the local parish governments must play a vital role in reviewing their local zoning and siting regulations. Third, LDNR/CMD believes the reasons stated above can be strengthened or improved through the implementation of the Louisiana Coastal Hazard Mitigation Guidebook (Priority 2), which, although

voluntary, will work with local governments and state agencies in the planning process in order to encourage smart siting and building practices in high hazard zone locations. Finally, fourth, the LRA Transportation and Infrastructure Recovery Team has created an Action Team for Management of Coastal Development in order to address such issues. LDNR/CMD believes this matter will be addressed collaboratively between the LRA and other state agencies.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and allocating 309 funding and why?

The coastal hazards enhancement area was ranked low last assessment, but is being ranked high for this reporting period. The priorities identified will give the opportunity to update its GIS permit review process in an extremely critical way and work with the LCPs in implementing guidance and procedures through the Louisiana Coastal Hazard Mitigation Guidebook, that although voluntary, encourages appropriate commercial and private development within the LCZ.

2001-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium
Low	Low

OCEAN RESOURCES

SECTION 309 PROGRAMMATIC OBJECTIVES

I. Develop and enhance regulatory, planning, and intra-governmental coordination mechanisms to provide meaningful state participation in ocean and Great Lakes resource management and decision-making processes.

II. Where necessary and appropriate, develop a comprehensive ocean and Great Lakes resource management plan that provides for the balanced use and development of ocean and Great Lakes resources, coordination of existing authorities, and minimization of use conflicts. These plans should consider, where appropriate, the effects of activities and uses on threatened and endangered species and their critical habitats. The designation of specific marine protected areas should be considered.

RESOURCE CHARACTERIZATION

Louisiana's coastal zone and ocean resources are inextricably linked. The Coastal Ocean Habitat, with its estuaries, wetlands, barrier islands and seashores serve as breeding and nursery grounds for many commercially important ocean species and migratory waterfowl. Louisiana's commercial and recreational fisheries provide important jobs and economic boost to the state. With the commercial fisheries landings of Louisiana ranking second in biomass to Alaska and third in economic value for the United States (U.S.). It is easy to understand how vitally important this resource is to Louisiana's economy. Between 2001-2005 commercial fisheries landings averaged 3 billion dollars a year, and supported approximately 31,400 jobs. An additional 13 billion dollars in revenue is estimated annually to result from recreational hunting and fishing expenditures.

The coastal ocean habitat also serves as the bridge from Louisiana's plentiful oil and gas resources to the refineries located inland. Over 150 million barrels of oil and 130 million cubic feet of gas are produced in Louisiana annually, with the majority of the production in Louisiana's coastal wetlands and coastal ocean. Oil and gas wells in the Outer Continental Shelf (OCS) off the coast of Louisiana account for 95% of all U. S. oil produced in the OCS. An additional 60% of oil and gas imports into the U. S. come through Louisiana's oil and gas infrastructure.

1. In the table below characterize ocean and/or Great Lakes resources and uses of state concern, and specify existing and future threats or use conflicts.

Resource or Use	Threat or Conflict	Degree of Threat (high/medium/low)	Anticipated Threat Or Conflict
Fisheries	Over fishing/ Bycatch	Medium	Loss of resource
Fisheries	Hypoxia	High	Loss of resource
Coastal Ocean Habitat	Coastal Development/ Point/Non-point Source Pollution	Medium	Loss of habitat due to alteration
Coastal Ocean Habitat	Climate Change	High	Loss of habitat due to alteration
Coastal Ocean Habitat	Hydrocarbon Extraction	High	Loss of habitat due to alteration

2. Describe any changes in the resources or relative threat to the resources since the last assessment.

There are several threats to the fisheries resources of Louisiana. With landings in a single year reaching as high as 600,000 metric tons per year there is increased pressure on the resource through over fishing and bycatch of fishing operations. These pressures are currently being researched by faculty in the Department of Oceanography and Coastal Sciences at Louisiana State University.

Hypoxia continues to be a threat to our coastal ocean resources, with the largest Dead Zone in a decade mapped in 2002. We have also continued to see an increase in coastal development. With that increase comes an increase in possible point and non-point source pollution, contributing to nutrient levels and thus the hypoxic zone in the gulf. Hypoxia continues to push our fisheries further and further offshore, increasing the distance commercial fisherman are required to travel, and exposing them to more hazards. The Hypoxia Working Group was formed in 2002 and works to help address this issue.

Louisiana also faces loss of its important coastal wetlands and other coastal ocean habitats as a result of coastal development, increased point and non-point source pollution, erosion due to storm action, subsidence and sea level rise due to climate change. With the continued loss of up to one acre of

coastal habitat every 25 minutes, this continues to be a challenge for Louisiana.

Management Characterization

1. Identify significant state ocean and/or Great Lakes management programs and initiatives developed since the last assessment:

	Change Since Last Assessment		
Management Category	**Significant**	**Moderate**	**None**
Statewide comprehensive ocean/Great Lakes management statute			**X**
Statewide comprehensive ocean/Great Lakes management plan or system of Marine Protected Areas			**X**
Single purpose statutes related to ocean/Great Lakes resources			**X**
Statewide ocean/Great Lakes resources planning/working groups	**X**		
Regional ocean/Great Lakes resources planning efforts		**X**	
Ocean/Great Lakes resources mapping or information system	**X**		
Dredged material management planning		**X**	
Habitat research, assessment, monitoring			**X**
Public education and outreach efforts			**X**

2. For categories with changes summarize the change, specify whether it was a 309 or other CZM driven change and specify funding source, characterize the effect of the changes in terms of both program outputs and outcomes.

Statewide Ocean Resources Planning/Working Groups – Hypoxia working group

The Hypoxia Working Group is a subset of the Mississippi River Basin Alliance, Lower Mississippi River Basin. The Alliance is funded by the EPA and works to coordinate response and research throughout the Basin. Though focus primarily is on reducing the nitrogen loads reaching the northern Gulf of Mexico, general improvements in water quality basin-wide are being achieved as well. The Hypoxia Group has been active in providing a forum for the coordination of hypoxia efforts and state policy work. Coordination of this working group is funded by the Louisiana Governor's Office and the in-kind donations of participants and their various agencies/companies.

Regional Ocean Resources Planning Efforts – "An Ocean Blueprint for the 21st Century"

Congress passed the Oceans Act of 2000 in response to the large changes to the U.S. coastal areas in the previous 35 years. Between 1965 and 2000 more than 37 million people and 19 million homes and businesses were added to the Nation's coastal areas, along with the development of the marine transportation infrastructure and increase in coastal tourism. With this growth however came damages to our coastal resources, creating the need for reassessment of ocean policy. In September of 2001 the U. S. Commission on Ocean Policy began its comprehensive review of U. S. Ocean Policy. It fulfilled its mandate to submit recommendations for a coordinated comprehensive national ocean policy on September 20, 2004 by submitting its final report entitled "An Ocean Blueprint for the 21st Century." On December 19, 2004, the U.S. Commission on Ocean Policy expired.

Ocean Resources Mapping and Information Systems

During the 2001-2005 timeframe the LDNR/CMD Support Services Section completed several projects in this area.

- All oyster seed grounds in Louisiana were digitally mapped. This was a CZM driven change that was funded by LDNR/CMD.
- Information on oyster leases in Louisiana was made available via the internet to the public. This was a CZM driven change that was jointly funded by CWPPRA and 309.
- Information on oil and gas wells was made available to the public via the internet, and additional MMS platform and pipeline data have been downloaded and made available. This was a LDNR/CMD funded project.
- Completed a project to map infrastructure, which included all pipelines in state waters. This was the first project of its kind and was a project jointly funded by 309 and Minerals Management Service (MMS).

- Completed a project to map the isohaline lines associated with Davis Pond. The purpose was to predict habitat change. This was a 309 project that was jointly funded by LDNR/CMD and CWPPRA.

Dredge Material Management Planning

CMD continues to require beneficial use of dredged material wherever possible, and to encourage it when not mandatory. The single biggest dredging agency in the coastal zne is the USACE, which maintains 10 navigation channels in coastal Louisiana. Some 30-40% of this dredged material is used beneficially; the rest is lost due primarily to the expense of moving it to a beneficial location.

Breton Island, LA serves as an important coastal resource for migratory birds and breeding waterfowl as well as important protection from wave action and storm surge during storm events. During the calendar years 2001 and 2005 the USACE undertook a program which was fully federally funded to restore parts of Breton Island through beneficial use of dredge material. Material created by the maintenance dredging of the Mississippi River Gulf Outlet was utilized for island renourishment.

CMD attempts to increase the amount of beneficial use by facilitating partnerships with the USACE, and some projects have in the past been accomplished using supplemental funds from CWPPRA, Sections 204 and 1135 of the Corps' Continuing Authorities Program, and LDNR's own coastal restoration program.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

At this time there are no priority needs or major gaps in addressing the programmatic objectives identified for the Ocean Resources enhancement area.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and designating 309 funding and why?

The Ocean Resources enhancement area was previously identified as an area of low priority and is still considered an area of low priority. Though the threats and conflicts to these resources are high, we feel the progress that is being made statewide and by LDNR/CMD in these areas is sufficient. There are no proposed strategies for this enhancement area for during the next five years.

2000-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium

Low	**Low**

WETLANDS

Section 309 Programmatic Objectives

I. Protect and preserve existing levels of wetlands, as measured by acreage and functions, from direct, indirect and cumulative adverse impacts, by developing or improving regulatory programs.
II. Increase acres and associated functions (e.g., fish and wildlife habitat, water quality protection, flood protection) of restored wetlands, including restoration and monitoring of habitat for threatened and endangered species.
III. Utilize non-regulatory and innovative techniques to provide for the protection, restoration, and acquisition of coastal wetlands.
IV. Develop and improve wetlands creation programs.

Resource Characterization

1. Extent of coastal wetlands

Louisiana's uniquely formed coastal zone area has been shaped by the Mississippi River system. Ranked sixth in the world in terms of freshwater discharge (Milliman and Meade, 1983), the Mississippi River system drains more than 40% of the contiguous United States and parts of Canada. Due in large part to this natural and dynamic system, the wetland dominated ecosystem, which covers Louisiana's coastal zone, is filled with sensitive resources. These resources are important to Louisiana citizens, as well as the nation, who depend on them for commerce and recreation. These wetlands truly are America's Wetlands.

Wetland loss in Louisiana accounts for 90% of the coastal marsh loss occurring in the Nation (USACE 2004). The Louisiana wetland ecosystem ranges from natural levee and beach ridges to forested swamps and freshwater, intermediate, brackish and saline marshes. These wetlands provide migratory flyways, critical habitat for migrating birds, and nesting habitat for endangered bird species, and provide a buffer from hurricanes and other storms.

It was estimated from the year 2000 that over the next 50 years Louisiana would lose 6,600 acres per year with an additional net loss of 328,000 acres that may occur by 2050, which is almost 10% of Louisiana's remaining coastal wetlands (Barras et al., 2003, USACE 2004).

Wetlands Type*	Extent (acres & year of data)*	Trends (acres/year)*
Tidal	N/A	N/A
Non-Tidal/Freshwater	940,811*	See #2
Publicly Acquired** Easements	127,970 ** 290***	N/A
Wetlands		
Intermediate Marsh	724,290*	See #2
Brackish Marsh	584,523*	See #2
Saline Marsh	374,778*	See #2
Swamp/Wetland Forest	1,040,786*	See #2
Wetlands Benefited[1]	60,650****	See #2
Other		

* USACE 2004

** Louisiana Department of Administration, Office of State Lands, State Land and Building Systems Database (2006). This data includes State acquired land purchases, quitclaims, donations, agreements, and judgments.

*** As per LDNR/CRD/Land Rights Section

****Louisiana Department of Natural Resources, Restoration Technology Section (2006)

2. If information is not available to fill in the above table, provide a qualitative description of wetlands status and trends based on the best available information. Also, identify any ongoing or planned efforts to develop quantitative measures for this issue area. Provide explanation for trends.

In 2002 the USACE began the Louisiana Coastal Area Ecosystem Restoration (LCA) Study resulting in the publication of the LCA Ecosystem Restoration Study Final Programmatic Environmental Impact Statement. Appendix B of this FPEIS documented the historical and projected coastal land changes in Louisiana from 1978-2050. Trend data exhibited a net loss of 419 square miles (34.9 sq. miles/year) from 1978-1990 and a 239 square mile (23.9 sq. miles/year) loss

[1] The Louisiana Coastal Restoration Program uses benefited acres for the restoration projects implemented in the state under this program as opposed to acres created or acres restored.

from 1990-2000 (Barras et. al 2003). The projected land loss from 2000-2050 is 513 square miles [(10.26 sq. miles/year) Barras et. al 2003)].

Louisiana coastal managers, planners, and resource scientists are continually working to develop methods for quantifying gains, losses, and changes to the landscape of the LCZ for the reason of keeping up with the dynamic system that so many or working to maintain, enhance, and restore for Louisiana residents and for the nation. Louisiana's coastal restoration initiatives are unlike those of other coastal states. Restoration in Louisiana occurs at a large scale and for long-term periods. The LCZ comprises approximately 13,053 square miles of area and provides a buffer from hurricanes, storms, and floods. This is extremely important to public, private, and commercial property and infrastructure.

Preliminary reports by the USGS state that Hurricanes Katrina and Rita transformed approximately 100 square miles of marsh to open water. The most significantly impacted areas were in southeastern Louisiana from Hurricane Katrina such as St. Bernard and Plaquemines Parishes, the Breton Sound area, and the Pontchartrain, Pearl River, Terrebonne, and Barataria Basins. Hurricane Rita did not pack quite the punch that Katrina did, but did cause marsh degradation in Terrebonne and Barataria Basins (USGS).

3. Characterize direct and indirect threats to coastal wetlands, both natural and manmade. For threats identified, provide the following information: scope of threat, recent trends, and impediments to addressing the threat.

	Significance		
Threat	**High**	**Medium**	**Low**
Development/fill	**X**		
Altered hydrology	**X**		
Erosion	**X**		
Pollution			**X**
Channelization	**X**		
Nuisance or exotic species	**X**		
Freshwater Input	**X**		
Sea Level Rise	**X**		

Other			**X**

Development/fill - During the last century, a large quantity of wetland vegetative communities have been converted for development or agronomic use (USACE 2004). Such enterprises required significant changes to the landscape in order to control hydrology given the wetland soils existing in Louisiana. Regulatory programs like those administered by LDNR/CMD and the USACE work to minimize impacts caused by such development and resolve user conflicts. A review of CUPs during 2001-2005 revealed approximately 1203 acres of wetlands in the LCZ was developed and or filled. Marsh impacts are in areas that were dredged to construct a short canal or slip in which to place a barge to drill for oil and gas, for fill activities for construction of camps and houses, or for those activities that do not recover to marsh subsequent to pipeline installation but revert to linear areas of open water. Impacts to forested wetland habitats are fill for construction of subdivisions and houses and pipeline construction which does require the removal of the trees. Table 2 details the common development/fill activities within the LCZ during 2001-2005.

Table 2. Percent of total of permit activities in the LCZ during the reporting period.

PERMIT ACTIVITY	PERCENT OF TOTAL
Drill Barge and Structures	17.1
Other (production) Barges and Structures	2.2
Drill Site	13.4
Propwashing	1.8
Maintenance Dredging	5.9
Riprap/Erosion Control	0.8
Pipeline/Flowline	9.8
Sewerline	0.2
Cable	0.6
Bulkhead and Fill	2.9
Wharf/Pier/Boathouse	3.1

Homesite/Driveway	9.6
Subdivision Development	5.3
Levee Construction	1.4
Bridge/Road	2.0
Other Structures	12.4
Drainage Improvements	2.0
Fill for Development	2.4
Dredge for New Slip	0.6
Vegetative Plantings	1.2
Plug and Abandon Activity	1.0
Site Clearance	0.2
No Data	3.9

Forested wetlands make up approximately two million acres throughout the state of Louisiana, with over half being in the LCZ. Significant loss and decrease in productivity of some of these forested wetlands has occurred over the years from natural and manmade consequences causing substantial ecosystem degradation. Over the past several years, the issue of harvesting these degraded areas has become a widely debated regulatory issue. Scientists are concerned that harvesting in some of these degraded areas will not support regeneration, which will lead to a change in vegetative community or open water conditions. In some instances, landowners plan to harvest the forest then turn the property over to developers, while others seek conservation opportunities through various federal and state agencies and non-profit organizations. The importance of these forested wetlands cannot be overlooked or underestimated as they provide a critical natural buffer against storm surge.

Alteration of hydrology – Altered hydrology has always been a major factor in influencing landscape changes in the LCZ. Levees were first constructed in the 18th century, which interrupted the overbank flows and arrested large-scale deposition of sediment to the wetlands (USACE 2004). Today coastal marshes suffer severely due to the lack of freshwater nutrients and sediment, which acts to stifle marsh productivity and vertical accretion (Delaune et al. 1990). This

along with coastal subsidence and global sea level rise significantly affects the coastal marshes. Other factors such as municipal drainage systems and roads and railroad embankments have also been associated with wetland loss from accelerated drainage, disturbance of natural drainage and impoundment, and physical removal for borrow material (USACE 2004).

Erosion - The threat of coastal erosion in the LCZ is significant and remains a paramount issue for LDNR/OCRM. The Louisiana coast has approximately 350 miles of sandy shoreline along its barrier islands and gulf beaches and about 30,000 miles of land-water interface along the bays, lakes, canals, and streams (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). When erosion occurs there is a loss of coastal geomorphology. That is geomorphic features such as natural levees, lake rims, land bridges, cheniers, and barrier islands and shorelines are lost or degraded due to the effects of wind and/or wave erosion. Barrier islands play a critical role in protecting coastal wetlands, bays, and estuaries by reducing wave impacts at the margins of the coastal wetlands and serve as important natural buffers during storms (USACE 2004). Barrier islands are very dynamic and naturally degrade over time. Historic land loss rates of barrier islands can average as high as 50 acres per year over several decades. Hurricane events can cause as high as 300 acres of loss per year (USACE 2004).

Channelization - Construction of canals for oil and gas production and navigational purposes has affected wetland degradation through changing marsh hydrology, disrupting sheet flow, hindering drainage, changing sediment movement patterns, causing impoundment and flooding and encouraging saltwater intrusion and increased tidal exchange (USACE 2004).

Nuisance or exotic species – The threat of invasive and exotic species to the ecosystem is a significant problem in the LCZ. Some areas are already degraded and as a result are more susceptible to being overtaken by invasive species. In situations as this, invasive aquatic species can alter local hydrology and hinder growth and reproduction of native aquatic plants (Chabreck 1972a). Invasive plant species can interfere with drainage and flood control, and impede navigation and recreational activities (Westbrooks 1998).

In the 1930's nutria were accidentally introduced to Louisiana. Damage to wetlands caused by nutria and muskrat herbivory has occurred throughout the LCZ. "Eat-outs" are extremely harmful to the marsh vegetation because not only is the marsh vegetation depleted, but the root system is permanently damaged (USACE 2004).

Freshwater input - Areas across the LCZ suffer from the lack of freshwater and sediment found in the Mississippi River. Historically, the Mississippi River switches its course providing vital sediments and nutrients to coastal habitats.

The Mississippi River can no longer switch courses and leave its banks to inundate vast coastal areas, and as a result, these coastal areas are starved of freshwater and sediments that provide essential nutrients and sediments important to marsh growth and land accretion. Ultimately, this has caused ecosystem degradation across the entire LCZ through subsidence, sea level rise, and saltwater intrusion. The LCA has several large-scale freshwater diversion projects planned for coastal Louisiana that aim to convey freshwater and sediments where needed in the hope to rejuvenate coastal marshes and forested wetlands.

Sea level rise - Louisiana is experiencing an estimated average relative sea level rise of 3.4 – 3.9 ft/century and an estimated subsidence rate of 0.5 – 4.3 ft/century in the Deltaic Plain and .25 – 2.0 ft/century for the Chenier Plain (USACE 2004). Relative sea level change is defined as the difference between the change in eustatic sea level and the change in land elevation. The majority of the LCZ is experiencing a net loss of land due to the fact that sediment accretion can not keep pace with the rate of subsidence. As a result Louisiana's land elevation continues to decrease.

Management Characterization

1. Within each of the management categories below, identify significant changes since the last assessment:

	Change Since Last Assessment		
Management Category	**Significant**	**Moderate**	**None**
Regulatory program	**X**		
Wetlands protection policies and standards	**X**		
Assessment methodologies (health, function, extent)	**X**		
Impact analysis			**X**
Restoration/enhancement programs	**X**		
Special Area Management Plans			**X**
Education/outreach	**X**		
Wetlands creation programs			**X**

Mitigation banking			**X**
Mapping/GIS/tracking systems	**X**		
Acquisition programs	**X**		
Publicly funded infrastructure restrictions			**X**

2. For categories with changes provide the following information for each change: Characterize the scope of the change, describe recent trends, and identify impediments to addressing the change.

Regulatory Program

Revision of Mitigation Rules

The CUP Mitigation Rules, La. Admin. Code 43:I,724, were established in August 1995 with agency and stakeholder input. In recent years, LDNR/CMD permit and mitigation staff have recognized the need to improve the CUP mitigation process in order to help streamline the permitting process and make it more efficient. During the 2001-2005 assessment period, LDNR/CMD mitigation staff have rewritten the mitigation rules to reflect updated restoration costs, to evaluate time-based mitigation requirements, and to increase the ability of the LCPs to successfully achieve mitigation. The modified rules have gone through internal agency review and are currently undergoing a legal citation review. The estimated date for promulgation of the revised rules is July 10, 2006. The benefits of these revised mitigation regulations will be realized by LDNR/CMD permit and mitigation staff, LCPs, and stakeholders.

Memorandum of Understanding Between the Department of Natural Resources and the Department of Wildlife and Fisheries for Activities Occurring in or Affecting the Louisiana Coastal Zone

The CUP is the basic regulatory tool of LDNR/CMD and is required for certain projects in the LCZ, including but not limited to dredge and fill work, bulkhead construction, shoreline maintenance, and other development projects. A prime concern of the CUP program is to regulate activities that may increase the loss of wetlands and aquatic resources, as well as reduce conflicts between coastal resource users. Coordination between other federal and state regulatory agencies is essential in processing CUP effectively and efficiently. In 2005 an MOU was signed between LDNR/CMD and LDWF, which outlined specific elements that will result in more efficient permit processing and continued resource protection (Appendix A). The establishment of this MOU fulfills the Governor's commitment to reducing permit delays, especially for oil and gas activities, and provides more-timely coordination and dispute resolution procedures to reduce permitting delays and conserve coastal resources.

Coastal Use Permitting Program Streamlining Effort

In 2001 LDNR/CMD began the initial steps in beginning a permit streamlining initiative due in part to stakeholder frustration with the CUP process. Interests were expressed by the Governor's office in reducing delays and LDNR/CMD desired to better assist and educate applicants on how to submit complete applications, and use technology to achieve better, faster, and more consistent permit reviews. Streamlining actions included revising the joint permit application, introducing the automated permit processing system, providing training to permit analysts, developing permit escalation procedures, and establishing new outreach efforts. Preliminary streamlining results revealed the processing time for General Permits (GP) and CUPs was reduced by 29 days (45%) between 2001 and 2003, and the processing time for Exempt, No Direct and Significant Impacts (NDSI), GP, and CUP was reduced by 39 days (57%) between 2001 and 2003.

Wetlands protection policies and standards

Coastal Protection and Restoration Authority

The Coastal Protection and Restoration Authority was created by Act 8 of the 2005 Special Legislative Session. Formally the Coastal Wetlands Conservation and Restoration Authority, the Authority is charged with creating a master plan that fully integrates the state's coastal restoration and hurricane protection efforts. The legislature places responsibility for the direction and development of the state's comprehensive master coastal protection coastal vegetated wetlands conservation and restoration plan in the Wetlands Conservation plan with the Coastal Protection and Restoration Authority within the office of the governor. Primary responsibility for carrying out the elements of the plan relative to coastal wetlands conservation and restoration is placed in the LDNR/OCRM. Primary responsibility for carrying out the elements of the plan relative to hurricane protection is placed with the Office of Public Works and Intermodal Transportation within the Department of Transportation and Development. In order to maximize the effectiveness of coastal protection efforts, the secretaries of the Department of Natural Resources, the Department of Transportation and Development and the governor's executive assistant for coastal activities shall use an integrated team effort to jointly coordinate master plan development with federal agencies and political subdivisions, including levee districts.

Assessment methodologies (health, function, extent)

Coastal Wetland Forest Conservation and Use Science Working Group

As described in the previous performance report, the issue of timber harvesting in the coastal area has become very important over the past two years. There is considerable concern that timber harvesting in much of the LCZ may be non-sustainable, largely because continued subsidence and resultant higher water levels have greatly reduced regeneration. However, the State and Local Coastal Resources Management Act (SLCRMA) provides that forestry activities are exempted form Coastal Use Permitting, and EPA has ruled that the Clean Water Act's Section 404 forestry exemption applies to such timber harvesting. The

apparent lack of regulatory protection for these forests has aroused public concern that timber harvesting of coastal forests will result in the permanent loss of these forests and that such losses are inconsistent with the state's coastal restoration program. As a result of this, the Governor appointed a Coastal Forestry Policy group, which consists of the Science Working Group (SWG) and the Advisory Panel (AP). The SWG was largely composed of wetland scientists and foresters, and its job was to acquire scientific data to develop sustainability criteria, and formulate policies for sustainable timber harvest. The AP is largely composed of state and federal agency representatives, as well as landowners and professional foresters, and its job was to provide information to the SWG. The Administrator is the official DNR delegate to the AP and the Assistant Administrator is the alternate.

The findings of the SWG were released in 2005. Once the final report was issued, the SWG was disbanded and the AP took a different role as the policy advisory group to the Governor's Office of Coastal Activities. To summarize, the report established three "condition classes" of coastal forests: Condition Class I forests, which will reforest naturally; Condition II forests, which can be reforested by using appropriate techniques; Condition Class III forests, which will inevitably convert to another habitat type if logged. The SWG also recommended that a moratorium be placed on the harvesting of Condition Class III forests. Further, the SWG established a boundary area for coastal forests, which extends well beyond the LCZ. The forestry and landowner AP representatives are generally in opposition to the boundary, the Condition Class system, and the moratorium concept. The major area of consensus is that non-regulatory methods, such as acquisition or incentive programs, need to be used to achieve the no-harvest goal for Condition Class III forests. The AP will continue to meet on this issue and provide their recommendations in March of 2006.

Wetlands creation programs

Coastal Impact Assistance Program

The Coastal Impact Assistance Program (CIAP), Title 371 of the Energy Policy Act of 2005, returns a portion of federal oil and gas royalties to coastal states and counties based on their respective levels of energy production, population and coastline. Under the current version of this title, Louisiana stands to receive $540 million over the next four years for coastal impact assistance. LDNR/OCRM is in the process of developing a plan required by the CIAP.

Mapping/GIS/tracking systems

Permit database

In late 1999 the Arc View GIS permit analysis system was implemented. All of the GIS databases were moved to ESRI format, either shape files or Geodatabases. This led to a completely different way of reviewing permits. Prior to that, all the information that had to be verified was on paper maps. The files had to be reviewed against a dozen different maps and took time. Now, all of the information is on-line, the computer runs a query against the databases and the

analyst is alerted to potential problems and/or impacts. Although this system was implemented in 2000, which is outside of our reporting period, the impact of the system was not felt until 2001. During 2001 and 2002 a USGS employee and a employee demonstrated the permit system to several state and federal agencies and at conferences.

Acquisition programs

The Coastal and Estuarine Land Conservation Program

LDNR/CMD is the lead agency for the State of Louisiana's coastal management program. In FY 05, LDNR/CMD staff submitted four priority projects to potentially be acquired using Coastal and Estuarine Land Conservation Program funds. CELCP was established to protect coastal and estuarine lands considered important for their ecological, conservation, recreational, historical or aesthetic value. The program provides funding for projects that ensure conservation of these areas for the benefit of future generations, and that can be effectively managed and protected. LDNR/CMD staff is currently developing the CELC Plan for FY 06.

Education/Outreach

America's Wetland: Campaign to Save Coastal Louisiana

In 2002, then Governor Michael J. Foster, announced a three year initiative, America's Wetland: Campaign to Save Coastal Louisiana. This is the largest ever public awareness campaign launched by the State of Louisiana. The campaign acts to bring to the forefront issues related to coastal land loss at local and state levels to national and world status.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

Priority 1 – High: Beneficial Use of Dredge Material Contribution Fund

According to La. Rev. Stat. 43:214.30, whenever a proposed use or activity requires a CUP for the dredging or disposal of from 25,000 to 500,000 cubic yards of any water bottoms or wetland within the LCZ, the secretary of LDNR may require the beneficial use of the dredge material. Consideration includes a site specific statement reflecting estimated costs and the availability of a suitable disposal area. Long term management strategy disposal areas are utilized when practical. Activities not in the vicinity of long term management strategy disposal areas are considered on a case by case basis through the CUP process. Beneficial use of dredge material is required in circumstances where it is deemed economically feasible, but is waived in those cases when it is not economically feasible.

Over the years, many CUP decisions were made that waived the criteria of beneficially using the dredge material due to the project's specifics. As a result, in order for the state to fulfill its obligation under the public policy provisions of SLCRMA, LDNR/CMD is proposing to investigate the cost effectiveness of beneficial placement of dredged material in those cases deemed economically infeasible. A potential alternative for those cases where it is not economically feasible to dispose of the dredge material beneficially in the LCZ is to determine the feasibility of providing the benefits through payment into the Beneficial Use of Dredged Material Fund based on a fair cost.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

The wetlands enhancement area was ranked high for the last reporting period, and is being ranked high for this reporting period. The priorities identified will give LDNR/CMD the opportunity to for the state to fulfill its obligation under the public policy provisions of SLCRMA and continue necessary research and outreach to expand the LCRPs capabilities of enhancing and protecting wetlands and moderating user conflicts.

2000-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium
Low	Low

CUMULATIVE AND SECONDARY IMPACTS

Section 309 Programmatic Objectives

I. Develop, revise or enhance procedures or policies to provide cumulative and secondary impact controls.

Resource Characterization

1. Identify areas in the coastal zone where rapid growth or changes in land use require improved management of cumulative and secondary impacts (CSI). Provide the following information for each area:

Rapid growth and development within the Louisiana Act 361 coastal zone continues on the Pleistocene terraces of St. Tammany, Tangipahoa, and Livingston Parishes and the natural levees and bottomland hardwoods of St. Charles and St. John the Baptist Parishes in the river region. St. Tammany Parish south of Interstate Highway 12, receives a significant influx of families moving from Orleans, Jefferson, and St. Bernard Parishes. Tangipahoa Parish in the vicinity of Pontchatoula and south of Hammond, serves as a bedroom community for workers from the south shore of Lake Pontchartrain (the New Orleans region and the river parishes). Livingston Parish is rapidly growing as people leave East Baton Rouge Parish. St. Charles and St. John the Baptist parishes function as bedroom communities for the New Orleans region. General population growth characterizes other parts of the LCZ due to an improving economy related to the oil and gas industry and diversification of businesses. Parishes like St. Tammany, Livingston, and Tangipahoa are beginning to adopt smart growth and sustainable development principals.

Only the Louisiana Department of Environmental Quality 305b report presents a comprehensive evaluation of cumulative and/or secondary impacts of growth in watersheds. One may anticipate generic consequences from areas of rapid growth and development in suburban areas, such as increased runoff from roads, driveways, and parking lots carrying transportation-related pollutants; higher sewage releases; more trash, litter; and garden and yard byproducts. Growth also means locating and constructing solid waste sites so as not to adversely impact coastal waters. An increasing population burdens facilities the public uses to access the LCZ; for example, boat ramps and fishing or crabbing places.

In 2005 the Clean Marina Program was instituted in coastal Louisiana and recognized two graduates of the program. The Louisiana Clean Marina initiative is an effort to assist marina operators to protect the resources that provide their livelihood: clean water and fresh air by providing technical

advice and educational material to marina operators and boaters. These natural assets are essential features of the boating industry. Ironically, it is the enjoyment of these natural wonders that may lead to their decline.

The last assessment for the LCRP highlighted two issues that during the reporting period have been reported on or resolved in some fashion. These issues dealt with the brown marsh phenomenon and the unrestricted withdrawal of groundwater. Brown marsh or "saltwater marsh die-off was first discovered in the spring of 2000 in Lafourche, Terrebonne, Jefferson, and Plaquemines Parishes. Current findings suggest that multiple stressors acting in tandem on the *Spartina* are likely to have caused the die-back phenomenon rather than a single stressor, such as the drought conditions occurring at that time.

Recent events have resulted in statewide interest and public concern about the protection and conservation of freshwater resources, particularly about the type and/or quantity of water use, and whether uses are appropriate and/or do not optimize vital freshwater resources. Act 49 of the 2003 Regular Legislative Session requires the LDNR-Office of Conservation to administer all matters related to the management of Louisiana's ground water resources to ensure sustainability of those resources. A major component of that responsibility will be to monitor the ongoing use of aquifers in the state and to determine the effect of new wells on those aquifers. New wells determined to have an adverse impact on the sustainability of an aquifer or a nearby well may be subject to certain restrictions. Such restrictions could include limiting production, setting well spacing, and requiring metering. A Ground Water Resources Commission, made up of 19 members representing various departments, industries and interests in Louisiana, was also authorized in 2003.

2. Identify areas in the coastal zone, by type or location, which possess sensitive coastal resources (e.g., wetlands, waterbodies, fish and wildlife habitats, threatened and endangered species and their critical habitats) and require a greater degree of protection from the cumulative or secondary impacts of growth and development.

Area	CSI Threats/Sensitive Resources
Coastal wetlands	Urban runoff from developing areas
Water bodies (e.g. lakes, rivers, and estuaries)	fecalcoliforms primarily from septic tanks and municipal sewage systems; low dissolved oxygen from sewage, agriculture, or natural causes; sediment related problems such as turbidity,

	suspended solids, and siltation caused by agriculture or natural cause; and mercury related to fish consumption advisories due primarily to atmospheric deposition of mercury on the watershed.

Management Characterization

1. Identify significant changes in the state's ability to address CSI since the last assessment (e.g., new regulations, guidance, manuals, etc.). Provide the following information for each change.

Louisiana Clean Marina Guidebook

In 2004, the Louisiana Sea Grant published the Louisiana Clean Marina Guidebook. The guidebook provides an overview of actions that marine industry professionals can take to protect water and air quality. It is written for managers of full-service marinas. The recommendations contained within, however, are equally applicable to marinas with limited services as well as marine contractors. Marinas that adopt a significant proportion of the best management practices suggested within this guidebook will be eligible to be recognized as a Louisiana Clean Marina.

Comprehensive Wildlife Conservation Strategy

In Louisiana, LDWF is the government agency vested with conservation and management of the wildlife in the state, including aquatic life, and is authorized to execute the laws enacted for the control and supervision of programs relating to the management, protection, conservation, and replenishment of wildlife, fish, and aquatic life; and the regulation of the shipping of wildlife, fish, furs, and skins. The purpose of this CWCS is to develop a blueprint for guiding LDWF in the development of management actions for Louisiana's fish and wildlife species with emphasis on species of conservation concern and associated habitats they depend upon. The goals of the strategy are to focus on species conservation, habitat conservation, public outreach and education, and strengthening existing partnerships and building new ones.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy (i.e, inadequate authority, data gaps, inadequate analytical methods, lack of public acceptance, etc.).

LDNR/CMD has determined at this time there are no major gaps in addressing the programmatic objectives for the CSI enhancement area that could be addressed through a 309 strategy.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and designating 309 funding and why?

This enhancement area was ranked high for the previous assessment period, and is now ranked low. At this time we feel that the priorities identified in the Wetlands and Coastal Hazards enhancement areas are a more appropriate use of our resources. However, LDNR/CMD continues to work with the LDEQ, NOAA, and EPA on the Coastal Non-point Pollution Program.

2000-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium
Low	Low

MARINE DEBRIS

Section 309 Programmatic Objectives

I. Develop or revise programs that reduce the amount of marine and/or lake debris in the coastal zone.

Resource Characterization

1. In the table below, characterize the extent of marine/lake debris and its impact on the coastal zone.

The presence of marine debris on Louisiana's beaches and in coastal waters has economic, health and safety, and ecological impacts. Beach visitors find debris-strewn beaches unaesthetic. Scarce tax dollars for must be spent cleaning beaches. Trash fouls cooling intakes. Discarded pipe, equipment, abandoned or lost crab traps, nets, etc. ruin propellers or damage hulls of recreational and commercial vessels.

The people of Louisiana use the LCZ and nearshore waters for recreation year around. In the spring, fishing, boating and are prevalent activities; summer brings camping, swimming, and crabbing to the forefront. Fall and winter find groups fishing and hunting. Commercial fishing and trapping and oil and gas extraction, both onshore and offshore, occur throughout the year. With all of this activity a tremendous amount of trash is generated and often not brought back to land for proper disposal. As a result of much of the garbage being tossed over the side of the boat, marine debris becomes a problem. Marine debris is the litter and trash that accumulates along the beaches and in waterways of the LCZ.

Following Hurricanes Katrina and Rita, there is a substantial amount of debris strewn throughout the LCZ. As one can imagine, there is a great deal of disaster related debris such as trees and wood, building wreckage, sand, mud, silt and gravel, vehicles, as well as plenty of hazardous material such as toxic, or unknown chemicals that have washed onto beaches and shorelines across the coast. All of these debris types can pose injury to or kill marine life and humans, causing damage to important resources.

In response to Hurricanes Katrina and Rita, LDNR published a paper on storm debris use in coastal restoration for informational purposes as the State continues to develop a master debris management plan. The paper addresses potential uses of the debris and provides recommendations on what measures could be pursued by LDNR and coastal parishes.

Source	Impact (Significant/Moderate/ Insignificant	Type of Impact (Aesthetic, resource damage, etc.)
People	Insignificant	Aesthetic
Natural disasters	Significant	Aesthetic and resource damage

2. If any of the sources above or their impacts has changed since the last Assessment, please explain.

Louisiana's coastal area is still dealing with the debris clean up associated with the impacts of Hurricanes Katrina and Rita. Under FEMA's Public Assistance Grant, different categories of debris removal are funded. For example, a natural stream or flood channel where debris from the Hurricanes may cause flooding from a future storm would be eligible. If such flooding would cause an immediate threat of damage to improved property, removal of the debris only to the extent necessary to protect against an immediate threat would be eligible. However, not all public property clearance will necessarily be eligible.

Currently, the ESF-10 Joint State of Louisiana, EPA, and the Coast Guard Unified Command is proceeding with Hazardous Material (HAZMAT) and Oil Pollution Threat Removal to include drums, cylinders, tanks, and other containers in the coastal zone that pose a risk to public health and the environment. The goal of the recovery is to remove the larger HAZMAT debris threat without causing environmental injury greater than that posed by the HAZMAT itself. Existence of such debris can cause various aesthetic and resource damages.

3. Do you have beach clean-up data? If so, how do you use this information?

Programs such as the Barataria National Estuary Program and Lake Pontchartrain Basin Foundation typically have a beach clean-up event annually. In 2004, the Beach Sweep and Inland Waterway Clean-Up event was coordinated by the Louisiana Department of Environmental Quality, Litter Reduction and Public Action program in conjunction with The Ocean Conservancy, other federal and state agencies and private companies with the help of citizens who wanted to be actively involved. During the 2004 Louisiana Beach Sweep and Inland Waterway Cleanup, 2,045 volunteers came to clean up shorelines and waterways. Volunteers covered 72 miles, picking up 68,394 debris items that weighed 56,619 pounds. The 2005 Louisiana Beach Sweep and Inland Waterway Cleanup were cancelled due to Hurricanes Katrina and Rita. In Louisiana, cigarettes, food wrappers, and plastic beverage bottles accounted for over one quarter of all the debris items collected (LDEQ).

Management Characterization

4. For the categories below, identify significant state ocean/Great Lakes management programs and initiatives developed since the last Assessment:

	Change Since Last Assessment		
Management Category	**Significant**	**Moderate**	**None**
State/local program requiring recycling			**X**
State/local program to reduce littering			**X**
State/local program to reduce wasteful packaging			**X**
State/local program managing fishing gear	**X**		
Marine debris concerns incorporated into harbor, port, marina, and coastal solid waste management plans	**X**		
Education and outreach programs			**X**

5. For the changes identified above provide a brief description of the change.

State/local Program Managing Fishing Gear

Louisiana's Derelict Crab Trap Removal Program

The LDWF is the lead agency for this program, authorized by Act 48 passed in the 2003 Regular Legislative Session. The program designates the beginning and ending dates of the trap closure, geographical area of the trap closure, who may remove the abandoned traps, and the locations for placement of the abandoned traps for disposal. The program was developed to address the

negative impacts of abandoned crab traps which include ghost fishing mortality of blue crabs and bycatch; user group conflicts with shrimp fishermen and other water-based user groups; navigational hazards to boaters; and decreased visual aesthetics. The program is volunteer based and made up of organizations, governmental entities, and individuals.

Two trap closures and cleanups took place in 2004, a winter closure in an area of Terrebonne Bay Estuary and a spring closure in Vermilion Bay. The two closures resulted in a total of 6,894 crab traps collected. Four trap closures and clean ups took place in 2005 (Sabine Lake, Terrebonne Bay, Breton Sound, Vermilion Bay), resulting in a total of 4,623 derelict crab traps retrieved.

Although some crab fishermen will lose some fishing time and incur costs associated with trap relocation, and some dealers near the closure areas may experience a slight reduction in the supply of crabs, the potential impacts are outweighed by the benefits of removal of these derelict crab traps.

Marine Debris Concerns Incorporated into Harbor, Port, Marina, and Coastal Solid Waste Management Plans

Hurricane Katrina Debris Management Plan

The purpose of this guidance is to furnish local governments with basic information on hurricane debris management within the scope of effective environmental management. While LDEQ is willing to be flexible and innovative on various approaches to handling debris issues as a result of Hurricane Katrina, it must still adhere to its mission of protecting the state's environment to the fullest extent possible under the circumstances. The LDEQ will consider reasonable waiver requests in order to facilitate rapid and environmentally safe disposal, composting and waste diversion goals. This plan is updated periodically and given to FEMA to be incorporated into its debris management plan.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

Marine debris, litter, and recycling are currently under the jurisdiction of LDWF, LDEQ, and at least three other state agencies, as well as local governments. These agencies have funding and staff whose jobs are to promote waste reduction and recycling efforts, promote and coordinate anti-litter campaigns and cleanups and to enforce existing state and federal anti-litter laws. LDNR/CMD has no staff currently available for these activities or the jurisdiction to be involved in any capacity other than continuing the role of cooperating with the other state agencies and user groups.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

This enhancement area was ranked low for the previous assessment period, and continues to be ranked low. LDNR/CMD continues to work with the parishes and municipalities to reduce litter, debris, and used oil at marinas and boat ramps. The CMD uses its education and outreach programs to remind people about their responsibility to keep the coast clean and litter free.

2000-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium
Low	Low

SPECIAL AREA MANAGEMENT PLANNING

Section 309 Programmatic Objectives

I. Develop and implement special area management planning in coastal areas applying the following criteria:

- Areas with significant coastal resources (e.g., threatened and endangered species and their critical habitats, wetlands, waterbodies, fish and wildlife habitat) that are being severely affected by cumulative or secondary impacts;
- Areas where a multiplicity of local, state, and federal authorities hinder effective coordination and cooperation in addressing coastal development on an ecosystem basis;
- Areas with a history of long-standing disputes between various levels of government over coastal resources that has resulted in protracted negotiations over the acceptability of proposed uses;
- There is a strong commitment at all levels of government to enter into a collaborative planning process to produce enforceable plans;
- A strong state or regional entity exists which is willing and able to sponsor the planning program.

Resource Characterization

1. Using of the criteria listed above, identify areas of the coast subject to use conflicts that can be addressed through special area management planning (SAMP).

Area	Major Conflicts
None	None

Management Characterization

1. Identify areas of the coast that have or are being addressed by a special area plan since the last Assessment.

There are no areas of the coast that have or are being addressed by a special area plan since the last assessment.

2. Identify any significant changes in the state's SAMP programs since the last assessment (i.e., new regulations, guidance, Memorandums of Understanding, completed SAMPs, implementation activities, etc.). Provide the following information for each change.

There are no significant changes in Louisiana's SAMP program since the last assessment.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

There are no gaps in meeting Section 309 programmatic objectives.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

The CMD is represented on the Board of the Lake Pontchartrain Basin Foundation and participates on the Management Conference of the Barataria-Terrebonne National Estuary Program. LDNR/CMD also maintains working relationships with the LCPs. LDNR/CMD will continue to pay close attention to these local groups and the concerns that they have regarding coastal areas. Local planning initiatives offer the greatest chance of success because they include many basin residents and decision-makers.

2000-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium
Low	Low

ENERGY & GOVERNMENT FACILITY SITING

Section 309 Programmatic Objectives

I. Enhance existing procedures and long range planning processes for considering the needs of energy-related and government facilities and activities of greater than local significance.

II. Improve program policies and standards which affect the subject uses and activities so as to facilitate siting while maintaining current levels of coastal resource protection.

RESOURCE CHARACTERIZATION

Energy facilities and federal government facilities within the LCZ include the following: drilling and production platforms, an offshore oil port, Strategic Petroleum Reserve facilities, onshore facilities, assembly yards, storage depots, crew bases, tank farms, refining complexes, gasification facilities, and a vast network of pipelines, highways and roadways, governmental buildings, flood protection levees, sewerage treatment facilities, some landfills, airports, port facilities, state parks, and state wildlife management areas.

Energy Siting Activities

The Louisiana coastal legislation contains specific references to oil and gas issues. La. Rev. Stat. 49:214.27 C (12) states that one of the goals of the Coastal Use Guidelines will be to ... "establish procedures and criteria to ensure that appropriate consideration is given to uses of regional, state, or national importance, energy facility siting and the national interests in coastal resources." References to energy are found scattered throughout the guidelines, and one entire set of fourteen guidelines, the "Guidelines for Oil, Gas, and Other Mineral Activities" specifically address energy issues.

Liquefied Natural Gas

The demand for natural gas across the United States has grown over the last several decades. Domestic natural gas supplies have been unable to keep up with the demand, and as a result natural gas prices have become high and unstable. The use of liquefied natural gas (LNG) is becoming more popular due to the fact that the cost of producing and transporting LNG is more competitive than those associated with domestic natural gas (Congressional Research Services).

LNG is natural gas cooled to temperatures below minus -260°F which condenses to liquefied natural gas. Transportation of LNG is typically by tanker to an offshore or onshore terminal or facility where regasification takes place. Onshore

terminals consist of docks, LNG handling equipment, storage tanks, and interconnections to regional gas transmission pipelines and electric power plants. Offshore terminals regasify and pump the LNG directly into offshore natural gas pipelines or may store LNG in undersea salt caverns for later injection into offshore pipelines (Congressional Research Services). There are various techniques that can be used to regasify LNG such as the open rack vaporization (open loop system), submerged combustion vaporization or ambient air regasification (closed loop system). The open rack vaporization (ORV) technique has faced environmental criticism because of concern with the unknown effects this system may have on marine fisheries. The ORV uses a continuous stream of seawater as the source of heat to vaporize LNG and then discharges the water, which is now chlorinated and 20 degrees cooler, back into the ocean. The closed loop system does not rely on continuous intake of seawater for vaporizing the LNG. They do not have the same magnitude of impacts on fisheries stocks.

Louisiana ranks second in the nation in total energy production, ranking first in crude oil production and second in natural gas production. Louisiana is uniquely situated to be a major player in the distribution of LNG to the nation. The State has a specific advantage in that we have the infrastructure in place to assist in achieving this goal.

The State of Louisiana through the LDNR has two general areas of responsibility with respect to the siting and operation of LNG facilities located in the LCZ and federal offshore waters adjacent to the Louisiana coast. The LDNR administers the CUP program and reviews permit applications for developmental activities in the LCZ. The CUP program provides an opportunity to require the consideration of alternative site locations or operation of facilities, and to require mitigation for unavoidable habitat or species losses.

The second area of responsibility is the Federal Consistency Program. Under the CZMA, the LDNR reviews all federally licensed or permitted activities which may affect coastal resources, and for which a CUP is not required. Criteria for consistency authorization are essentially the same as for CUPs. Consistency authority is the main method by which states are able to have federally controlled activities in their coastal zones carried out in a manner consistent with their programs.

The Governor of the State of Louisiana has the authority to veto the siting of offshore ports through the Deep Water Ports Act.

As of October 17, 2005[2], there have been six LNG facilities proposed in offshore federal waters of which four have been approved by LDNR/CMD; three have been approved by USCG Maritime Administration (USCG/MARAD); two are pending LDNR/CMD and USCG/MARAD approval; and one has been withdrawn

2 Due to the disruption caused by Hurricane Katrina, MARAD and USCG temporarily suspended the processing of pending Gulf Coast Region Deepwater Port license application; however as of early March 2006 USCG/MARAD have resumed LNG review.

by the applicant. Onshore in Louisiana, there is one existing LNG facility, and there have been two permitted and one proposed.

Offshore Wind Power

In 1979 coastal Louisiana was identified as having a significant potential for wind energy development. Development of such a resource was not pursued. However, the issue was again raised in 2003 and has received much more attention. The reason for this is related to: an increase in the feasibility of wind power economics versus the high cost of fossil fuels, a recent study suggesting that the Gulf of Mexico (GOM) may possess a greater wind resource than previously thought, and a south Louisiana company's proposal to place wind power plants in state and federal waters on abandoned oil and gas platforms. Typically oil and gas platforms once abandoned must be deconstructed and sunk in the ocean at a designated location. Using the abandoned structures to aid in producing electricity would save the oil and gas industry hundreds of millions of dollars by avoiding the expense of removing the platforms.

The Louisiana Public Service commission called on the LDNR Technology Assessment Division to provide technical assistance. The Technology Assessment Division worked with the U.S. Department of Energy, National Renewable Energy Laboratory, and other state agencies to assess the issues of offshore wind power.

There are obvious attractions and drawbacks to generating wind energy. The fact that wind energy is a renewable non-polluting resource and the increase in costs for conventional fuels makes wind energy appealing. Some may argue the capital costs associated with construction and the potential aesthetic and bird fatalities that may result are major disadvantages to wind power (LDNR.

Government Facility Siting Activities

The Louisiana coastal program states (La. Rev. Stat. 49: 214.32 B.):

> Any governmental body undertaking, conducting, or supporting activities directly affecting the coastal zone shall ensure that such activities shall be consistent to the maximum extent practicable with the state program and any affected approved local program having geographical jurisdiction over the action.

The LDNR/CMD reviews the construction of new and the expansion of existing Federal installations, pursuant to the CZMA as a Direct Federal Action consistency determination (Subpart C of 15CFR930-30-44). Federal facilities of significance are the possessions of the U.S. Coast Guard, National Aeronautics and Space Administration (NASA), U.S. Navy, U.S. Department of Energy (DOE), the U.S. National Park Service, U.S. Fish and Wildlife Service, and the USACE. Although some acreage is for the installation and potential expansion, most acreage is for habitat/wildlife preservation and recreation.

Proposed construction activities associated with state and local governmental facilities are treated as standard CUP applications and are reviewed pursuant to the permitting requirements of the SLCRMA and the applicable Coastal Use Guidelines: guidelines applying to all uses (Guidelines 1.1 -1.10), guidelines for levees (Guidelines 2.1 - 2.6), guidelines for linear facilities (Guidelines 3.1 - 3.16), guidelines for dredged spoil disposal (Guidelines 4.1 - 4.6), guidelines for surface alterations (Guidelines 6.1 - 6.14), and the guidelines for waste disposal (Guidelines 8.1 - 2.9). The term "Maximum Extent Practicable" qualifier is applied to federal projects [15CFR930.39(c) of the NOAA consistency regulations].

Strategic Petroleum Reserve Expansion

The Energy Policy Act of 2005 directed the Secretary of Energy to fill the Strategic Petroleum Reserve (SPR) to its authorized one billion barrel capacity and to select sites to expand the SPR. On September 1, 2005 the Department of Energy released a Notice of Intent to Prepare an Environmental Impact Statement and Conduct Public Scoping Meetings to assess the proposed capacity expansion at three of the four existing SPR storage sites and the development of a new storage site in the Gulf Coast region. The existing sites are located in Texas, Louisiana, and Mississippi. The initial plans of DOE are to create two new sites and expand two existing sites in Louisiana. One proposed new site and one expansion site are located in the LCZ.

Hurricane Protection Levees

Following the passage of Hurricanes Katrina and Rita there were many emergency authorizations to work on levees and pumps throughout coastal Louisiana. At present, the USACE has been charged with building the levees back to their condition prior to Hurricanes Katrina and Rita. The USACE is drafting the South Louisiana Comprehensive Coastal Protection and Restoration Plan pursuant to the Energy and Water Development Appropriations Act, 2006 (P.L. 103-109) and the Department of Defense Appropriations Act, 2006 (P.L. 109-148). Concurrently, LDNR and LDOTD are coordinating to implement the Comprehensive Master Coastal Protection Plan as charged by the Coastal Protection and Restoration Authority.

Management Characterization

1. Identify significant changes in the state's ability to address the siting of energy and government facilities since the last Assessment (e.g., new regulations, guidance, manuals, etc.).

LNG Terminals in Louisiana

Offshore siting of LNG terminals is regulated under the Deepwater Act of 1974 (P.L. 93-627). The Secretary of Transportation has delegated authority to the Maritime Administration within the Department of Transportation and to the

United States Coast Guard, within the Department of Homeland Security. In 2002 the P.L. 93-627 was amended to include LNG terminals and lays out a detailed procedure for offshore facility siting. Also, a preexisting provision of the Deepwater Port Act allows the governor of a state adjacent to a proposed offshore LNG facility to have that facility license comply with the state's environmental protection, land and water use, or coastal zone management programs (33 U.S.C. §1508(b) Congressional Research Services). Regulation of onshore siting of LNG facilities resides with the Department of Transportation and the Federal Energy Regulatory Commission under the Pipeline Safety Improvement Act of 2002 (P.L. 107-355) and the Natural Gas Act of 1938, respectively.

As discussed previously, LDNR has two responsibilities to fulfill in regards to siting LNG terminals: the CUP program for onshore facilities and the Federal Consistency Program for facilities in federal offshore waters. Four offshore LNG terminal projects have been permitted and all proposed to use the ORV technique of regasification. The Louisiana Department of Wildlife and Fisheries has expressed concern with the unknown effect of the ORV regasification system's entrainment, impingement, and discharge characteristics on populations of marine species, particularly considering the number of license applications for this type of facility begin considered by the USCG across the GOM. The Gulf of Mexico Fishery Council and the National Marine Fisheries Service have both requested additional information in order to assess population-level impacts of the ORV on stocks of important marine species. LDNR Consistency Section strongly recommends to applicants to develop a detailed pre-and post-construction monitoring plan, impact prevention response plan, and mitigation plan in coordination with LDWF to address the potential unavoidable adverse effects of the LNG facility on fish and invertebrates.

Wind Energy

During the last assessment period, LDNR received a proposal from a south Louisiana company to place wind turbines on abandoned oil and gas platforms in state and federal waters and use them as wind farms to generate electricity. Research has shown that offshore Louisiana has a potential to support a productive wind energy industry (Crouch 2004, Archer and Jacobson 2003).

One potential impediment regarding the use of oil and gas platforms as wind farms was the fact that the state did not have the authority to permit offshore wind farms and that new legislation would be needed. As a result, in 2005 the legislature voted on House Bill No. 428 and later enacted La. Rev. Stat. 41:1731-1734 which:

> to authorize the Department of Natural Resources to lease state lands for the exploration, development, and production of energy from wind; to provide a process for leasing state lands for the exploration, development, and production of energy from wind; to provide for the powers and duties of the secretary of the

Department of Natural Resources; to provide for the powers and duties of the State Mineral Board; to authorize the implementation of fees; to provide for the promulgation of rules and regulations; and to provide for related matters.

To date there have been no CUP applications submitted to LDNR/CMD for developing wind farms in state waters.

Along the same lines of developing renewable energy in Louisiana, in 2003 regular session, the Governor signed the Louisiana Renewable Energy Development Act.

Lake Pontchartrain Basin Pipeline Corridor

The LCRP underwent a policy change to the CUP process when the Lake Pontchartrain Pipeline Corridor Project was completed in 2004. Historically, the placement and location of oil and gas pipelines throughout the LCZ has been a contentious issue, even prior to the establishment of the LCRP. Increasing offshore production has increased the need to construct pipelines while at the same time development has expanded in the Greater New Orleans Area. This has resulted in user conflicts between the energy industry and the coastal users and communities in the area, especially in Lake Pontchartrain. CMD proposed to establish north/south and east/west pipeline corridors traversing Lake Pontchartrain in the wake of new pipeline projects proposed in the area. In addition, the intention was also that the development of these corridors would serve as a model for use in other parts of the LCZ where similar circumstances had developed. The project involved stakeholders from the pipeline industry, regulatory and commenting government agencies, the environmental community, and other groups that expressed interest in participating in the project. A set of General Conditions for the CUP process were established outlining the location, placement, and design and construction criteria for the pipeline corridors, which were based on discussions with the above mentioned groups and the technical expertise of the CMD staff.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

The LDNR/CMD did not identify any gaps in achieving the Section 309 programmatic objectives for energy and governmental facility siting.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

The LDNR/CMD handles siting of energy and government facilities through its consistency provisions and its standard guidelines and regulatory authority. During the last assessment, LDNR/CMD ranked this priority high in order to resolve a user conflict within the LCZ. For this assessment LDNR/CMD will rank this enhancement area low, but will continue to listen to potential issues that may arise regarding energy and governmental facility siting.

2000-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium
Low	Low

AQUACULTURE

Section 309 Programmatic Objective

I. Enhance existing procedures and long range planning processes for considering the siting of public and private marine aquaculture facilities in the coastal zone.

II. Improve program policies and standards which affect aquaculture activities and uses so as to facilitate siting while ensuring the protection of coastal resources and waters.

Resource Characterization

1. Briefly describe the states aquaculture activities (e.g., existing procedures, plans, program policies and standards).

Aquaculture Statistics
The Louisiana Aquaculture Plan, Comprehensive Report (2000) published by the Louisiana Aquaculture Task Force defines aquaculture[3] as:

> *The propagation, maintenance, rearing and harvest of crustaceans, mollusks, fishes, amphibians, aquatic reptiles (such as turtles and alligators), or any other species of aquatic animal or plant within artificial reservoirs, tanks, cages, impoundments or other controlled environments, so as to prevent, at all times, the ingress or egress of animal and plant life from public waters including natural streams or lakes, be they fresh, brackish or saline.*

During the 2001-2005 assessment period, trends in aquaculture gross farm values stayed steady with only minor fluctuations on the order of 1% from year to year. On average between 2001 and 2004[4], state gross farm values were approximately $135 million. The 19 coastal parishes which make up the coastal zone contributed on average $60 million or roughly 45% of the gross farm values generated from aquaculture in the State of Louisiana.

3 The Louisiana Aquaculture Task Force determined their definition of aquaculture to be compatible with those statutes that reference aquaculture (La. Rev. Stat. 56:356, La. Rev. Stat. 3:263 (3) and (10), and La. Rev. Stat. 3:446.2 (3).

4 Data for 2005 was not released in time for the assessment.

Table 3. Summary of change in gross farm values and comparison of state and coastal parish gross farm values.

Year	Change in Gross Farm Value	State	Coastal
2004	-1.3	$128,528,524.00	$77,613,765.00
2003	0.8	$161,967,370.00	$52,436,041.00
2002	-1.0	$123,715,104.00	$52,910,725.00
2001	1.0	$125,007,532.00	$58,571,181.00
		$134,804,632.50	**$60,382,928.00**

Aquaculture Regulations

In the 2003 Regular Session of the Louisiana Legislature, House Bill No. 2013 was put forth to establish the Louisiana Aquaculture Coordinating Council to develop a program to oversee, coordinate, and regulate aquaculture and to promote aquaculture products. The then Governor, Governor Michael J. Foster vetoed the bill because the Council was established within the Department of Agriculture and Forestry, and Article IX Section 7 of the Louisiana Constitution of 1974 vests "control and supervision of the wildlife of the state including all aquatic life in the Louisiana Wildlife and Fisheries Commission". Governor Foster promulgated Executive Order MJF 03-15 which established the Louisiana Aquaculture Advisory Council within the executive department, Office of the Governor, but its existence was short lived.

Following this, in 2004 after extensive discussions between the Louisiana Department of Agriculture and Forestry and the Louisiana Department of Wildlife and Fisheries, Act 865 was enacted to provide a regulatory framework for the orderly development and maintenance of a modern aquacultural segment of Louisiana's agriculture industry and for the promotion of aquaculture and aquacultural products. The Act created the Louisiana Aquaculture Coordinating Council within the Department of Agriculture and Forestry and established a procedure for approving a species of finfish as suitable for aquaculture.

The Coastal Management Regulations (La. Admin. Code 43:I,723: B(1)(a)(i)), state that a coastal use permit is not required for aquaculture activities that take place on land consistently used for those activities. A state or local CUP will be required when the construction of an aquaculture site is within the LCZ that was not previously used for agriculture or aquaculture, is below the 5 ft mean sea level, and is not in a fastland. In such cases, LDNR/CMD permit analysts will determine if there are any alternative project sites, and if not, work with the

project applicant to minimize impacts to the wetlands. If the project results in wetland impacts, mitigation will be required. In cases when a CUP is not needed, local ordinances should always be checked for siting and construction requirements.

Mariculture is the practice of aquaculture in brackish or marine waters and includes hatchery breeding, transportation, implantation, propagation, growout, and harvesting of domesticated fish and other aquatic species (LDWF). Permits for mariculture projects can be obtained through the LDWF Mariculture Program. Projects must be within the LCZ on private property or water bottoms. A mariculture permit will not be issued until a CUP is issued if required for the reasons mentioned in the previous paragraph.

The Platforms for Mariculture Task Force (Task Force) was created following passage of Louisiana House Concurrent Resolution No. 176 (HCR 176). The resolution was adopted during the 2004 Regular Session of the Louisiana Legislature. HCR 176 directed the Task Force to study the following aspects of utilizing offshore oil and gas platforms for culturing marine organisms in the development of a Louisiana mariculture industry in the GOM: 1) economic feasibility and impact on other segments of the economy, 2) environmental impact and 3) regulatory considerations. Delivery of a written report of the findings and recommendations to the Governor and Legislature by January 31, 2005 was required (Appendix B). The study focused primarily on five (5) mariculture activities which could potentially utilize Louisiana GOM offshore platforms for culture operations. Mariculture activities of specific interest included: 1) net-pen culture; 2) oyster depuration; 3) ornamental fish; 4) coral and sponge harvest, and 5) platform sea farming.

2. Briefly describe environmental concerns (e.g., water quality, protected areas, impacts on native stock and shell fish resources). Also, describe any use conflicts (e.g., navigational, aesthetic, incompatible uses, public access, recreation, and future threats (e.g., shoreline defense works, introduced species).

Louisiana has a unique opportunity to take advantage of the continuing demand for fisheries products and is rich in the resources necessary for aquaculture development. Louisiana's landscape is conducive to aquaculture development and our climate satisfies a long growing season. In order to maintain a profitable aquaculture industry special attention must be paid to water quality which can directly affect the health of aquaculture products. Non-point sources of pollution have been of concern in recent years. Effluents from aquacultural operations are released into streams and rivers during heavy rainfall, when harvesting fish, to accommodate reproductive cycles of cultured animals, or to maintain acceptable water quality in the culture system (Romaire 1999). LSU AgCenter scientists continue to research and develop practical, cost-effective solutions to manage

pond effluents to comply with federal and state regulatory requirements, protect the environment and sustain profitability.

During the current reporting period, issues arose surrounding the effects that ongoing coastal restoration actions have on oyster fishing. Concerns were expressed by local oystermen that freshwater diversion projects may disrupt the salinity conducive for oysters to grow and thereby ruin the oyster production for the season. In simple terms, a freshwater diversion is a restoration technique that usually involves creating a control structure in a levee in order to connect a wetland with a freshwater source. The purpose of the diversion is to benefit species diversity, land building, nutrient cycling, sediment deposition, and habitat creation. Oyster fishermen, shrimpers, commercial and recreational fishermen are concerned about how the changes are going to affect their catches, and, quite possibly, their livelihood. As the coastal restoration initiative grows and more restoration implementation occurs across the state, issues such as this will have to be addressed and resolved cooperatively between the effected user groups.

The effects of the passage of Hurricanes Katrina and Rita on the aquaculture industry are still unknown at this time. Experts from LSU AgCenter caution that recent hurricane related weather could possibly cause problems for pond owners, including fish kills from low dissolved oxygen or disease, or loss of stocked fish or contamination with wild fish where floodwaters went over levees. Natural disasters of the magnitude of Hurricanes Katrina and Rita can cause a decline in production, decrease in the quality of product, disrupt supply and demand conditions, and increase production costs due to physical damage to infrastructure, which lead to revenue loss (LSU AgCenter Research & Extension a). Preliminary estimates of cumulative economic impact from Hurricanes Katrina and Rita to aquaculture due to reduced revenue and increased costs are thought to be $58.3 million (LSU AgCenter Research & Extension b).

Management Characterization

1. Identify significant changes in the state's ability to address the planning for and siting of aquaculture facilities since the last Assessment (new regulations, guidance, manuals, etc.).

As mentioned in the previous section, an environmental concern regarding aquaculture is non-point source pollution. The LSU AgCenter in cooperation with the Natural Resources Conservation Service, the Louisiana Department of Environmental Quality, the Louisiana Farm Bureau Federation, the Louisiana Department of Agriculture and Forestry has taken the lead in developing BMPs for aquaculture in Louisiana. Development and implementation of these BMPs can aid in reducing the impact of agricultural and aquacultural production on Louisiana's environment.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

The LDNR/CMD did not identify any gaps in achieving the Section 309 programmatic objectives for aquaculture.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

Previously aquaculture was ranked as a low priority and it will remain low for this assessment period. Aquaculture and mariculture are administered through the Louisiana Department of Agriculture and Forestry and the LDWF, respectively. LDNR/CMD will continue to provide assistance and work cooperatively with these agencies to address any issues that may involve LDNR.

2000-2005 Assessment	2006-2010 Assessment
High	High
Medium	Medium
Low	Low

STRATEGIES

Coastal Hazards

Task 1. Coastal Hazard Mitigation Guidebook

Program Change: The Coastal Hazard Mitigation Guidebook Outreach enhancement project may lead to an Administrative Change to the LCRP, defined by new or revised guidelines, procedures and/or policy documents that will provide meaningful improvements to the LCRP. Components of the guidebook will aid LDNR/CMD permit staff in making informed regulatory determinations regarding development in the coastal zone.

Year 1 (2006-2007)

LDNR/CMD Interagency Affairs staff will work with Louisiana Sea Grant Legal Division in order to aid in the coordination between guidebook developers, LCPs, and local officials to address issues pertaining to land use planning, and development. LDNR/CMD permit and mitigation staff will also work with Louisiana Sea Grant staff in order to highlight development issues pertinent to regulatory activities in the coastal zone.

LDNR/CMD staff will aid Louisiana Sea Grant in education/outreach to local coastal officials and planner, builders and consumers to assist them as they rebuild communities.

Likelihood of Success: The likelihood of success of the project is high given the importance of hazard mitigation in our coastal zone to building sustainable coastal communities for the future.

Task 2. Canal Construction and Maintenance

LDNR/CMD recognizes the significance of providing guidance to CUP applicants on the construction and maintenance of canals for uses in the coastal zone. Correct information regarding canal construction and maintenance methods is needed. A study comparing appropriate canal construction and orientation and the short and long term maintenance of these canals in relation to storm surge susceptibility and storm surge dampening would greatly aid regulatory agency personnel in providing direction to coastal users on the issue.

Program Change: The Canal Construction and Maintenance enhancement project will lead to an Administrative Change to the LCRP, defined by new or revised guidelines, procedures and/or policy documents that will provide meaningful improvements to the LCRP.

Year 1 (2006-2007)

The task will involve a contracted study (or studies) to determine appropriate canal construction and orientation and the short and long term maintenance of these canals in relation to storm surge and flooding. The

research will involve getting information from local, state, and federal agencies and academics. It is estimated that approximately $50,000 will be needed for the first phase of the task, which will not be completed in year 1.

Year 2 (2007-2008)

The research task will continue through completion. It is estimated that about $40,000 will be needed to complete the research phase of the task. The CMD will build a GIS database of the information provided by the research task in order to assist in permit and consistency reviews of uses which involve canal construction and maintenance. It is proposed that this will be done by DNR staff and cost approximately $80,000.

Year 3 (2008-2009)

Implementation of the administrative changes will be done by staff and is estimated to cost about $10,000 per year.

Likelihood of success

This task is likely to succeed because the data should be readily obtainable and the issue is of public concern. This information will aid regulatory agency personnel in providing direction to coastal users on the issue of canal construction and maintenance.

Task 3. Coastal Use Activities Affecting the Chenier Plain Ecosystem

LDNR/CMD recognizes the significant environmental and structural roles that natural coastal features play in Louisiana. Post Hurricanes Katrina and Rita, the State has recognized the significant role they play in hazard mitigation and protection of life and property in the coastal zone.

For this and other reasons, LDNR sees the need for an in-depth assessment and review of existing conditions of Louisiana's Chenier ridges, as well as a study of how anthropogenic activities are affecting the overall integrity of these geomorphic features. It would be prudent to initiate an outreach program to engage the local coastal program leaders in a study that would define certain human activities, such as grazing, forestry activities, urbanization, and mining, monitoring these activities for any changes, negative or positive, to the ecological, biological, and structural integrity of the chenier, and record these effects, looking for any correlations.

Program Change: The Coastal Use Activities Affecting the Chenier Plain Ecosystem enhancement project will lead to an Administrative Change to the

LCRP, defined by new or revised guidelines, procedures and/or policy documents that will provide meaningful improvements to the LCRP.

Year 2 (2007-2008)

The task will involve a study to determine the appropriate coastal activities that can take place on chenier ridges such as grazing, forestry activities, urbanization, and mining. The study will include an in depth assessment of the geomorphic formation and existing conditions of the chenier ridges. The goal of this study will be to determine the ecologic, biologic, and geomorphologic integrity of the chenier ridges when affected by those coastal activities described above. The research will involve getting information from local, state, and federal agencies and academics. LDNR/CMD support services staff will assist contractors in field investigations as necessary.

During Year 2, LDNR/CMD staff will establish an outreach program to engage the LCP officials in the study and incorporate local parish concerns on the issue into the study. The research will involve getting information from local, state, and federal agencies and academics. It is estimated that approximately $80,000 will be needed for the first phase of the task, which will not be completed in year 2.

Year 3 (2008-2009)

The research task will continue through completion. It is estimated that about $40,000 will be needed to complete the research phase of the task. Independent of the research task will be a contractual task to perform an analysis of the legal authority of CMD to regulate and/or review for consistency those activities which may affect canal construction and maintenance in the coastal zone. The legal analysis is estimated to cost approximately $30,000.

Year 4 (2009-2010)

The CMD will build a GIS database of the information provided by the research task in order to assist in permit and consistency reviews of uses which involve canal construction and maintenance. It is proposed that this will be done by DNR staff and cost approximately $80,000.

Year 5 (2010-2011) and Year 6 (2011-2012)

Implementation of the administrative changes will be done by staff and is estimated to cost about $10,000 per year.

Likelihood of success

This task is likely to succeed because the data should be readily obtainable and the issue is of public concern. This information will aid regulatory agency personnel in providing direction to coastal users on the issue of coastal activities affecting the Chenier Plain ecosystem.

Task 4. Digital Mapping of Levees, Pumps, and Flood Control Features in Coastal Louisiana and Update of the Regulatory Hazards Protocol

The issue of protection of coastal communities and existing infrastructure in recent months has become a paramount one. As an agency regulating activities in the coastal zone LDNR/CMD recognizes the need for a database consisting of tools that can aid regulators, planners, and restoration implementers in making informed decisions regarding emergency planning and response, facility and project siting, etc. Currently, almost all of the communities in the coastal zone have some sort of flood protection system. Most of the cities are surrounded by levees and the water levels controlled by pumps. There is no current map, hardcopy or digital, collectively of these flood protection systems. There are major flood protection systems built and maintained by the USACE and under the control of various State Levee Boards, other large levee systems maintained by the parish (county) governments, smaller systems under control of public drainage agencies, and numerous privately managed large levee and pump systems protecting residences and agricultural operations. All of the information and maps reside with the respective agency or individuals responsible for the systems; there is no central repository.

A GIS database with the location of levees and pump stations including basic and pertinent information about each of those features does not exist and is needed by many agencies of the State of Louisiana to more efficiently and effectively perform their mandates in the coastal zone. Additionally, for those critical applications of protection of life and property, specialized user interfaces, queries, and displays are needed that provide for use of the application without a great deal of training or knowledge of the GIS software. The goal of this project is to complete a GIS dataset of all levees and pump stations in the Coastal Zone of Louisiana and to develop tools that fulfill aspects of emergency response and planning as described in this proposal, as well as to design the project so that it is flexible enough to be used as a basis for future projects that refine and/or add to the data and utility of the data and tools associated with this project. These data and tools will be used for coastal use regulatory permit application review and determinations; coastal restoration project analysis and design; emergency response and planning; and flood protection and drainage projects planning.

In 1994, the Regulatory Hazards Protocol study was completed for LDNR/CMD as a 309 funded project. The Regulatory Hazards Protocol study was modular and interfaced with LDNR/CMD's existing permitting and consistency determinations. The protocols were established to provide LDNR/CMD staff the ability to determine the existence of coastal hazards, the applicability of the

coastal hazard to the coastal activity in question, and the subsequent determination of the appropriate degree of regulatory response. This information is now outdated and not of beneficial use to LDNR/CMD staff. As a result, this task will also include the updating of the Regulatory Hazard Protocols for LDNR/CMD to use when making permit and consistency determinations.

Program Change: The Digital Mapping of Levees, Pumps, and Flood Control Features in Coastal Louisiana and Update of the Regulatory Hazards Protocol enhancement project will lead to an Administrative Change to the LCRP, defined by new or revised guidelines, procedures and/or policy documents that will provide meaningful improvements to the LCRP.

Year 2 (2007-2008)

LDNR/CMD will begin incorporating data collected in 1990 by LDNR/CMD into ArcGIS geodatabase and begin reviewing the positional accuracy of the data using DOQQ aerial photography. Field staff will review the maps for their respective areas and, where needed, perform field inspections to determine and verify the status and locations of the levees and pumps. The database will be updated with the acquired information.

Simultaneously, the manager and field investigators will schedule meetings with the various levee boards and parish governments to review the information and data that exists in each respective agency and to acquire copies of paper maps and other data that will be needed for the project. The field investigators will provide field inspections to verify location and status of features.

Concurrent with these undertakings, LDNR/CMD will contract the update of the existing Regulatory Hazard Protocols completed in 1994. LDNR/CMD Permits and Support Services staff will provide guidance to the contractor in order to make certain that the data needs of LDNR/CMD are incorporated into the task and are appropriate for integration to the permit database and GIS system.

LDNR/CMD staff will coordinate with other state or federal agencies or academics to incorporate existing models that could be of benefit to both the mapping and update of the Regulatory Hazards Protocol.

Year 3 (2008-2009)

LDNR/CMD will enter the data compiled. It is likely that tasks from year 2 will continue into Year 3. The LDNR/CMD will import and/or create the maps and populate the databases with the data from each agency that was compiled in Year 2 by the Support Services Manager and the field investigators. The Support Services manager and field investigators will coordinate with the contractor to provide guidance and assistance on the

data. LDNR/CMD Support Services staff will incorporate the updated Regulatory Hazard Protocols and the digital map of the levee, pump, and flood control features into the LDNR/CMD permit database.

Year 4 (2009-2010)
The draft data will be furnished to each agency for final review. Demonstrations of the tools and data will be scheduled with the appropriate parish and state officials. These demonstrations will be scheduled in Baton Rouge and in each local parish and provided by Support Services, permit and mitigation, and local coastal program staffs. The resulting information and database will be shared with other agencies.

Likelihood of Success:
This project has a high likelihood of success due to the current government and public concern regarding the affects of coastal hazards on our coastal communities and on infrastructure important to the nation.

Wetlands

Task 5. Beneficial Use of Dredge Material Contribution Fund

According to La. Rev. Stat. 43:214.30, whenever a proposed use or activity requires a CUP for the dredging or disposal of from 25,000 to 500,000 cubic yards of any water bottoms or wetland within the LCZ, the secretary of LDNR may require the beneficial use of the dredge material. Consideration includes a site specific statement reflecting estimated costs and the availability of a suitable disposal area. Long term management strategy disposal areas are utilized when practical. Activities not in the vicinity of long term management strategy disposal areas are considered on a case-by-case basis through the CUP process. Beneficial use of dredge material is required in circumstances where it is deemed economically feasible, but is not required in those cases when it is not economically feasible.

Over the years, many CUPs were issued which did not require that dredged material excavated as a result of the permitted activities be used beneficially. As a result, in order for the state to fulfill its obligation under the public policy provisions of SLCRMA LDNR/CMD is proposing to investigate the cost effectiveness of beneficial placement of dredged material in those cases deemed economically infeasible. The ultimate outcome for those cases where it is not economically feasible to dispose of the dredge material beneficially in the LCZ, is for the CUP applicant to pay into a dedicated fund based on a fair cost. The fund will be used by the State for beneficial use projects such as the Dedicated Dredge Program.

Program Change: The Beneficial Use of Dredge Material Contribution Fund enhancement project will lead to an Administrative Change to the LCRP, defined by new or revised guidelines, procedures and/or policy documents that will provide meaningful improvements to the LCRP.

Year 2 (2007-2008)

LDNR/CMD will work with CRD and CED staff to determine the cut-off for cost effectiveness of using dredge materially beneficially. As much as possible LDNR/OCRM staff will use already existing information such as Dedicated Dredge Program data. LDNR/CMD staff will determine a fee based on cost/cubic yard of dredge material that will be required in those cases where the beneficial use of dredge material is not cost effective.

Year 3 (2009-2010)

LDNR/CMD will establish a Division Policy requiring applicants to pay a fee to the Beneficial Use of Dredge Material Mitigation Account in those cases when it is determined not to be cost effective to dispose of dredge material beneficially. The CMD will build a GIS database which will allow

for the tracking of contributions made to the fund. It is proposed that this will be done by DNR staff and cost approximately $80,000.

Likelihood of Success: The likelihood of success of this project is high given the current need for a mechanism to deal with the beneficial use of dredge material in those instances defined above. This “cash-out” method gives the LCRP a way to beneficially use dredged material resources and affords the applicant a fast and trouble-free, yet responsible way of dealing with the coastal impacts.

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APPENDIX A. MEMORANDUM OF UNDERSTANDING BETWEEN THE DEPARTMENT OF NATURAL RESOURCES AND THE DEPARTMENT OF WILDLIFE AND FISHERIES FOR ACTIVITIES OCCURRING IN OR AFFECTING THE LOUISIANA COASTAL ZONE.

APPENDIX B. LOUISIANA PLATFORMS FOR MARICULTURE TASK FORCE FINAL REPORT OF FINDINGS AND RECOMMENDATIONS TO THE LOUISIANA LEGISLATURE AND GOVERNOR